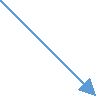
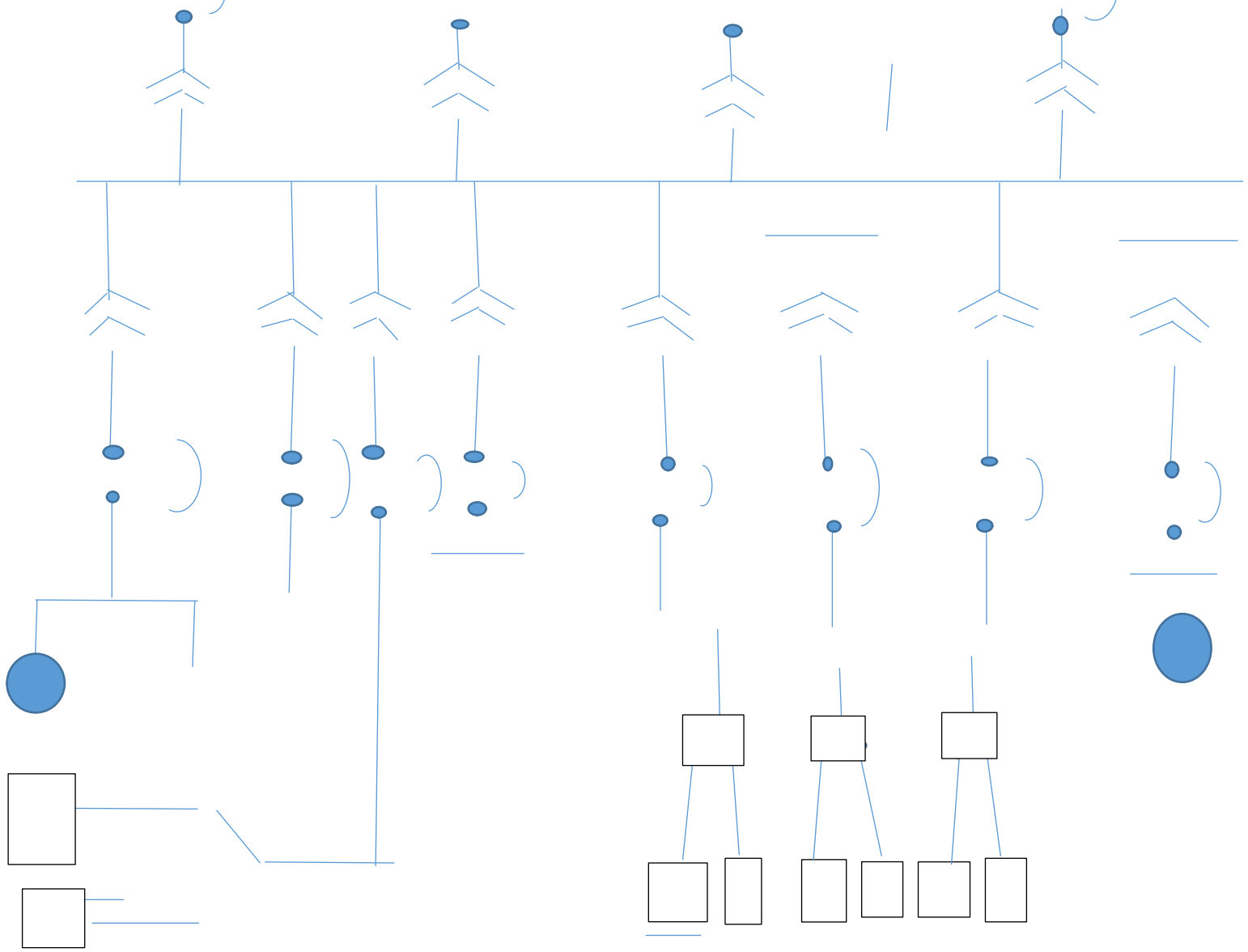
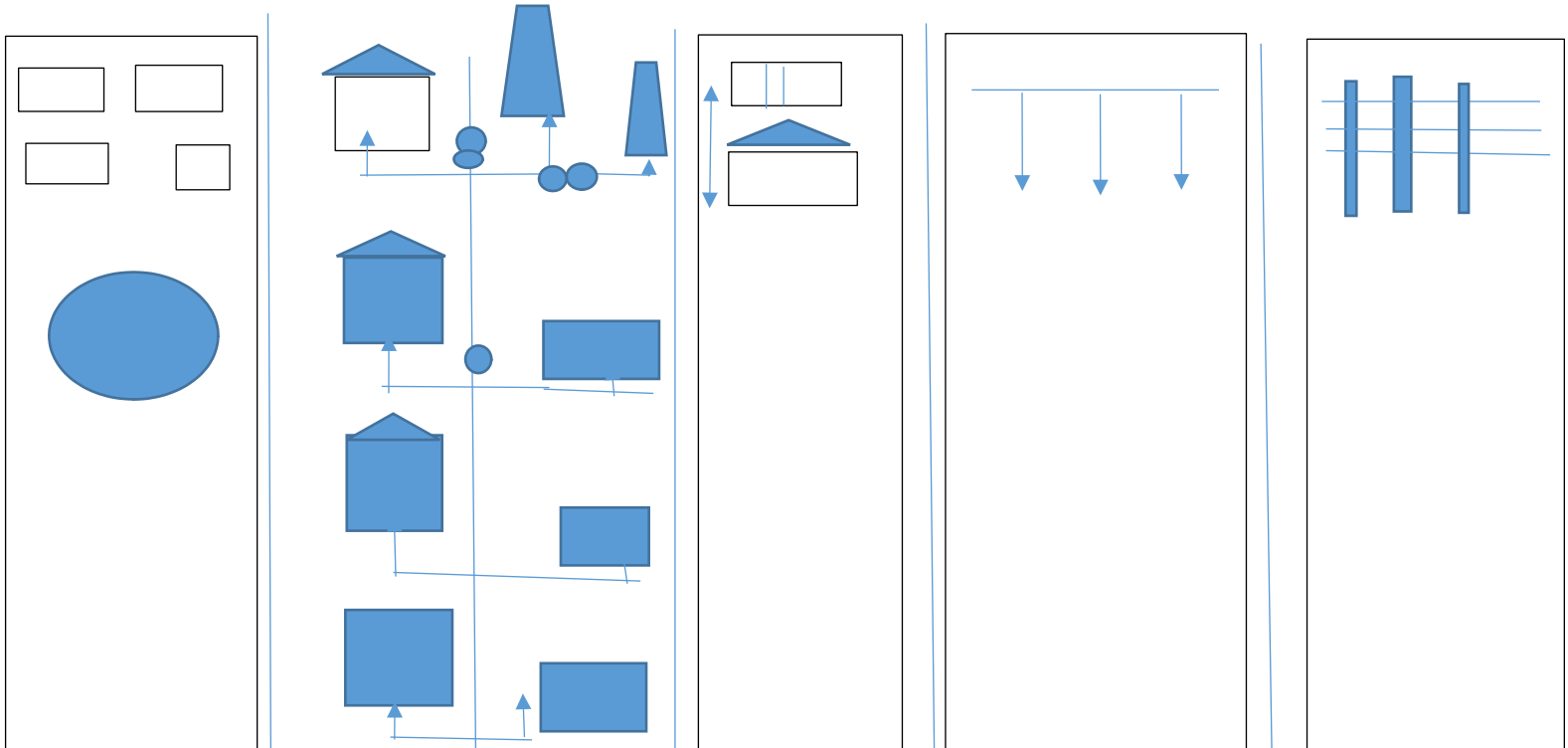
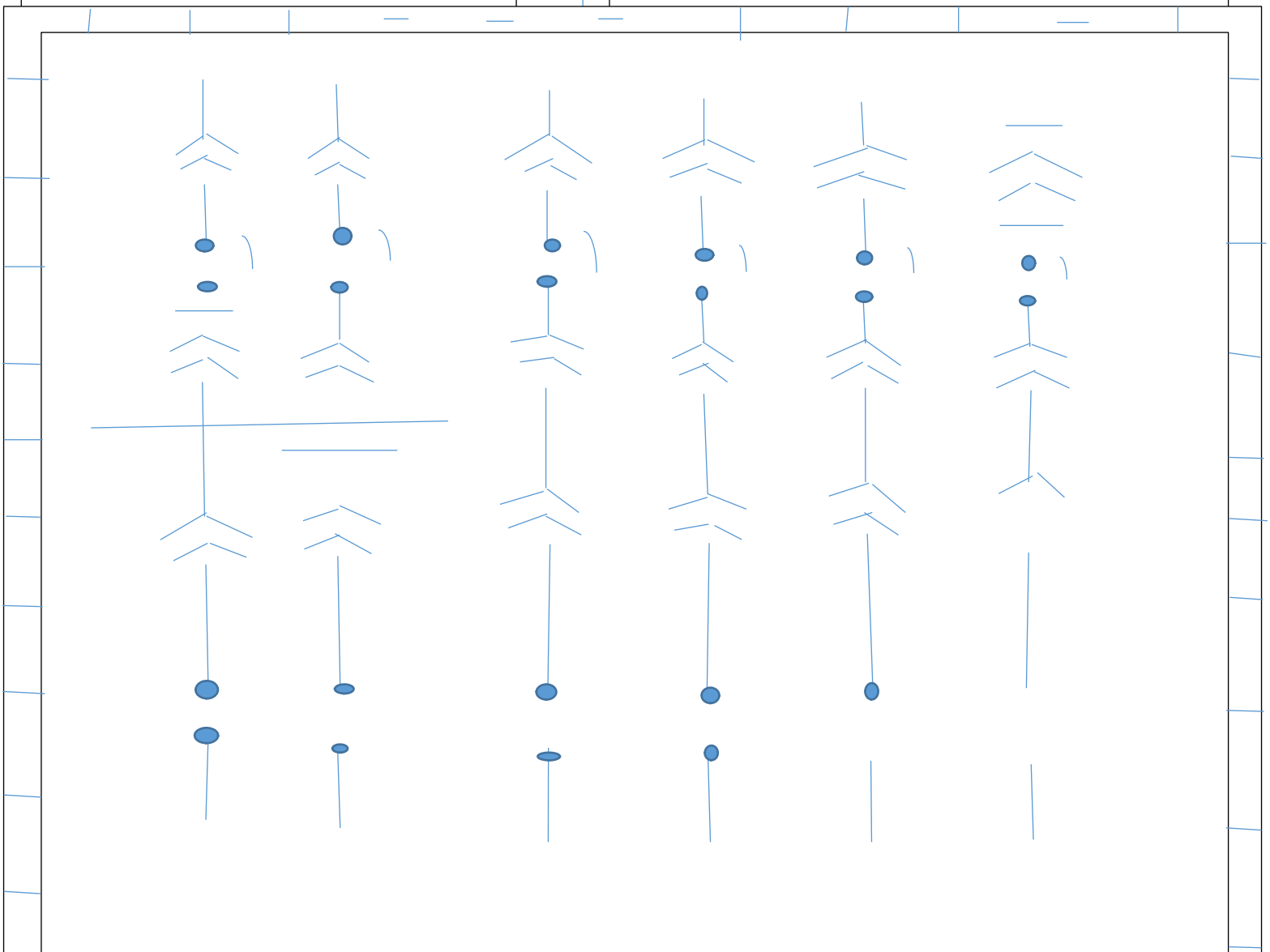
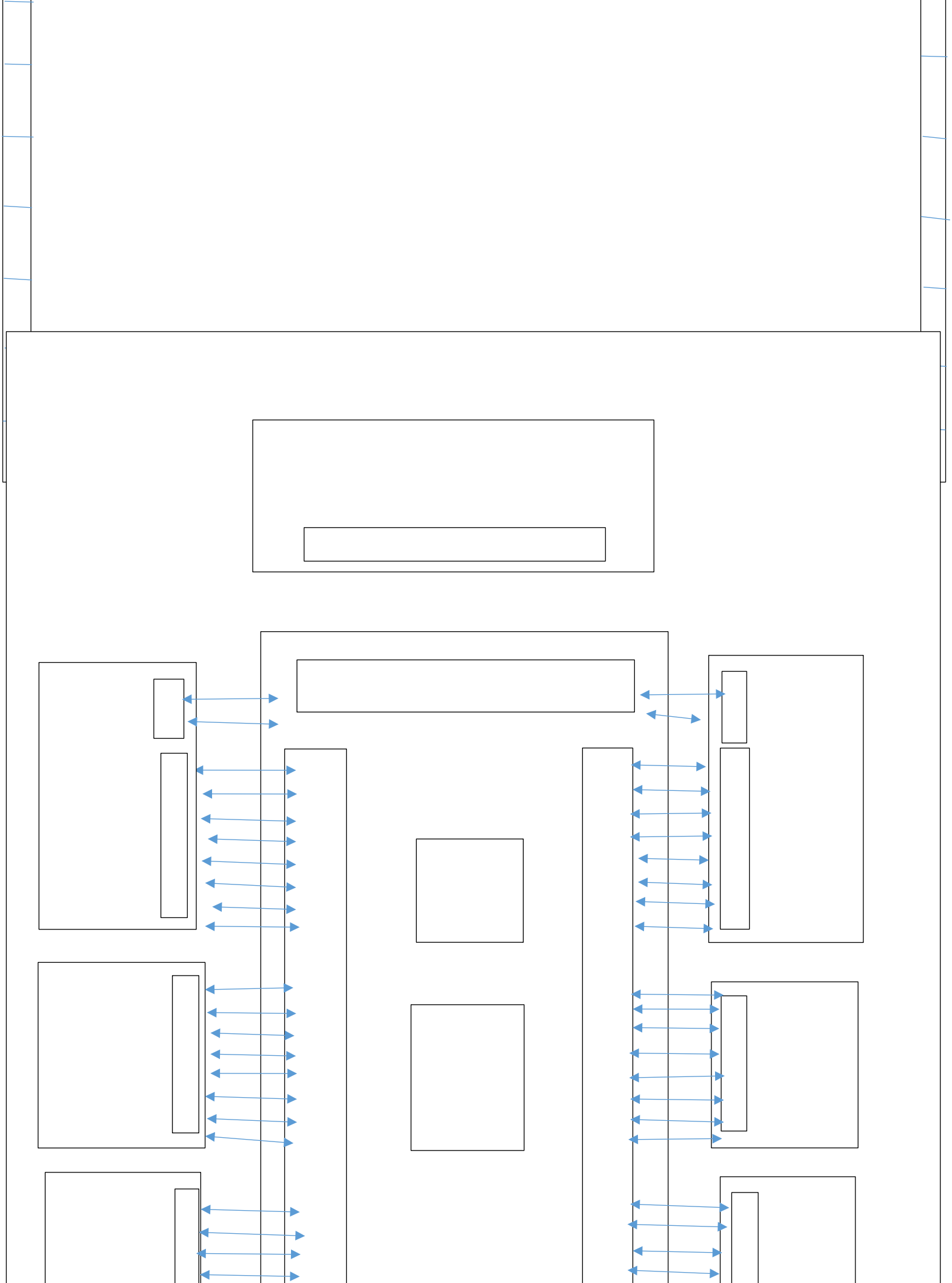
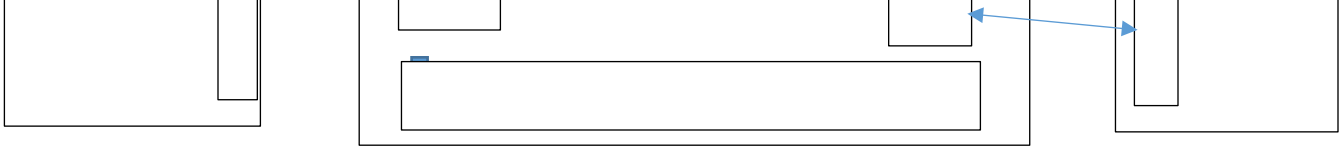


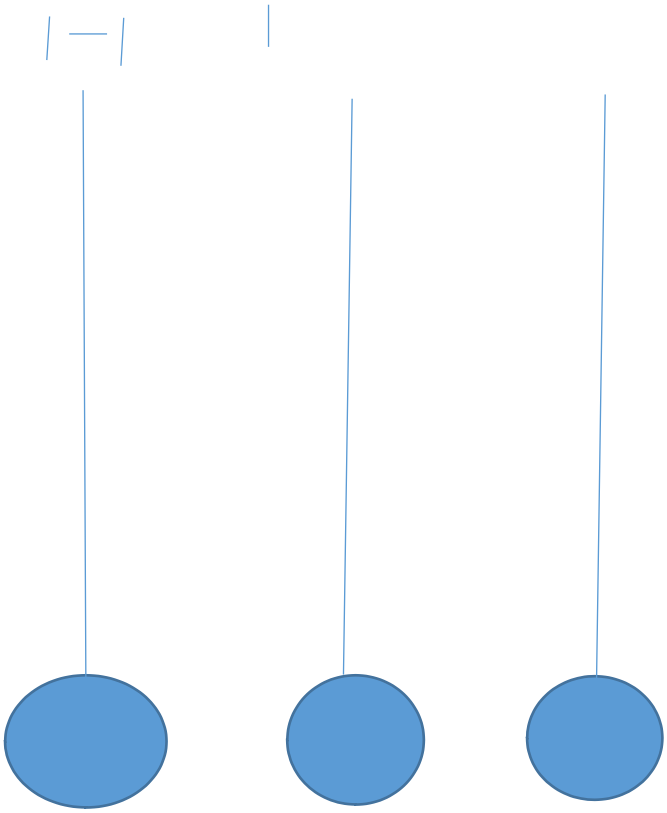


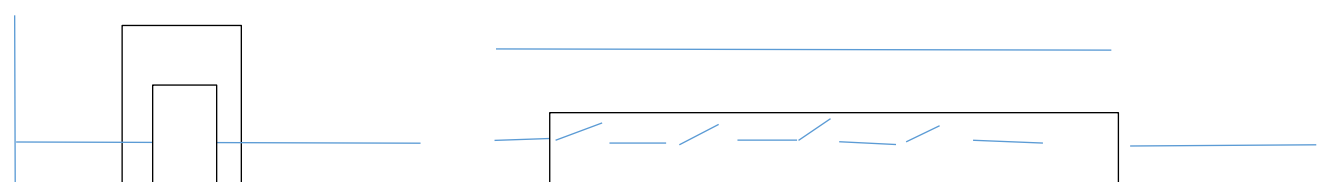


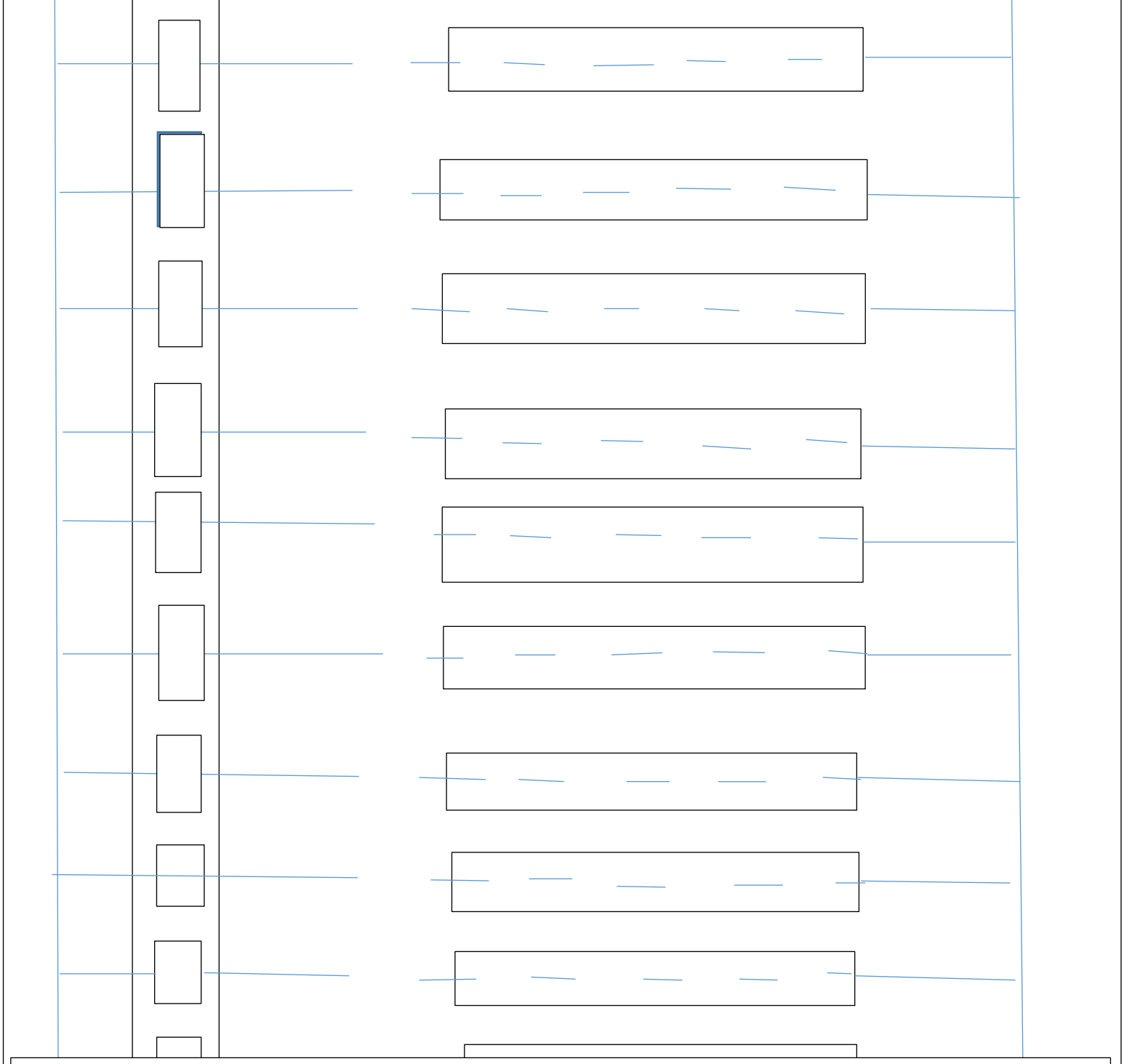


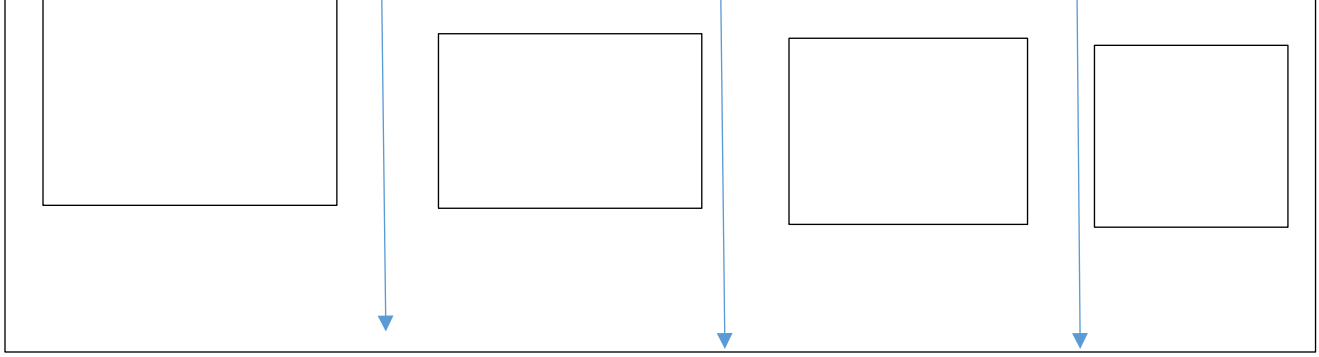


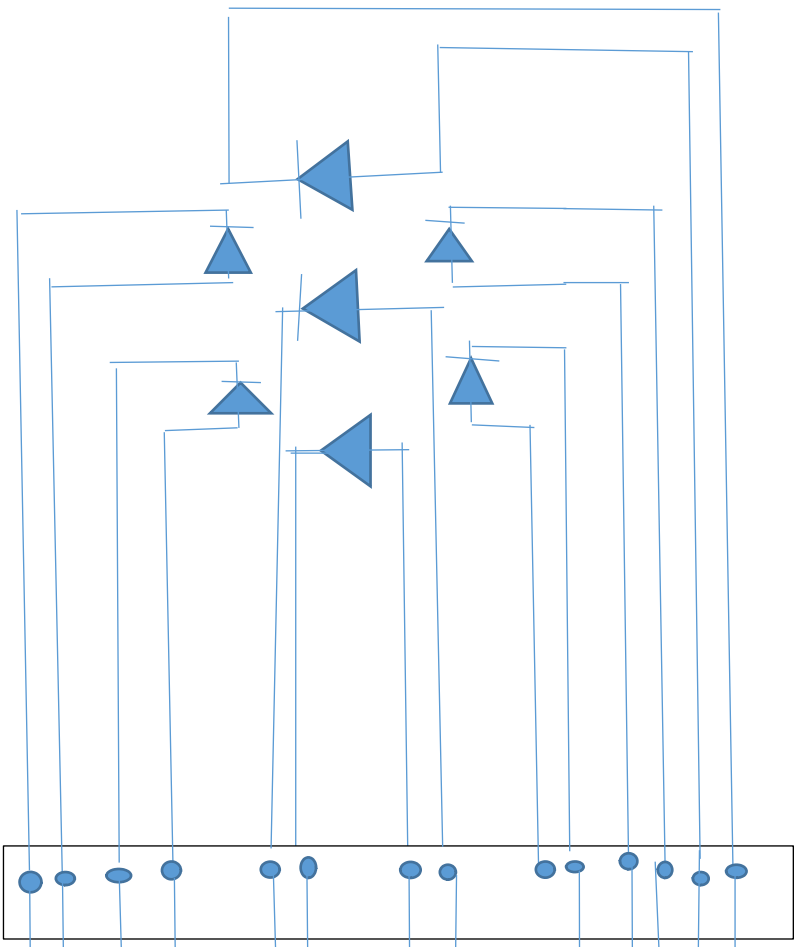


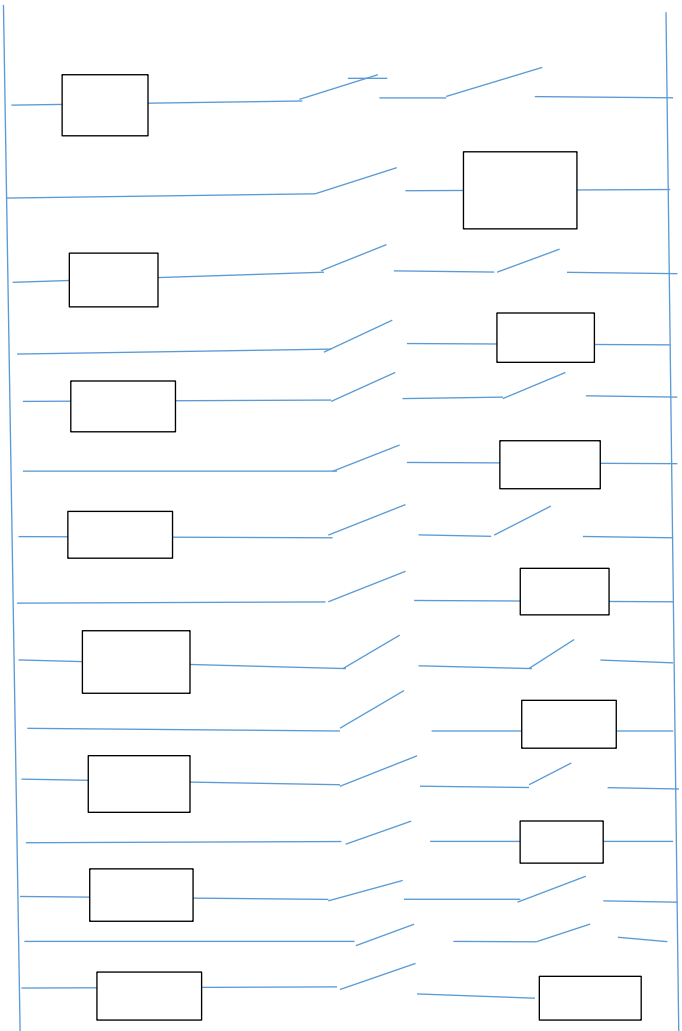


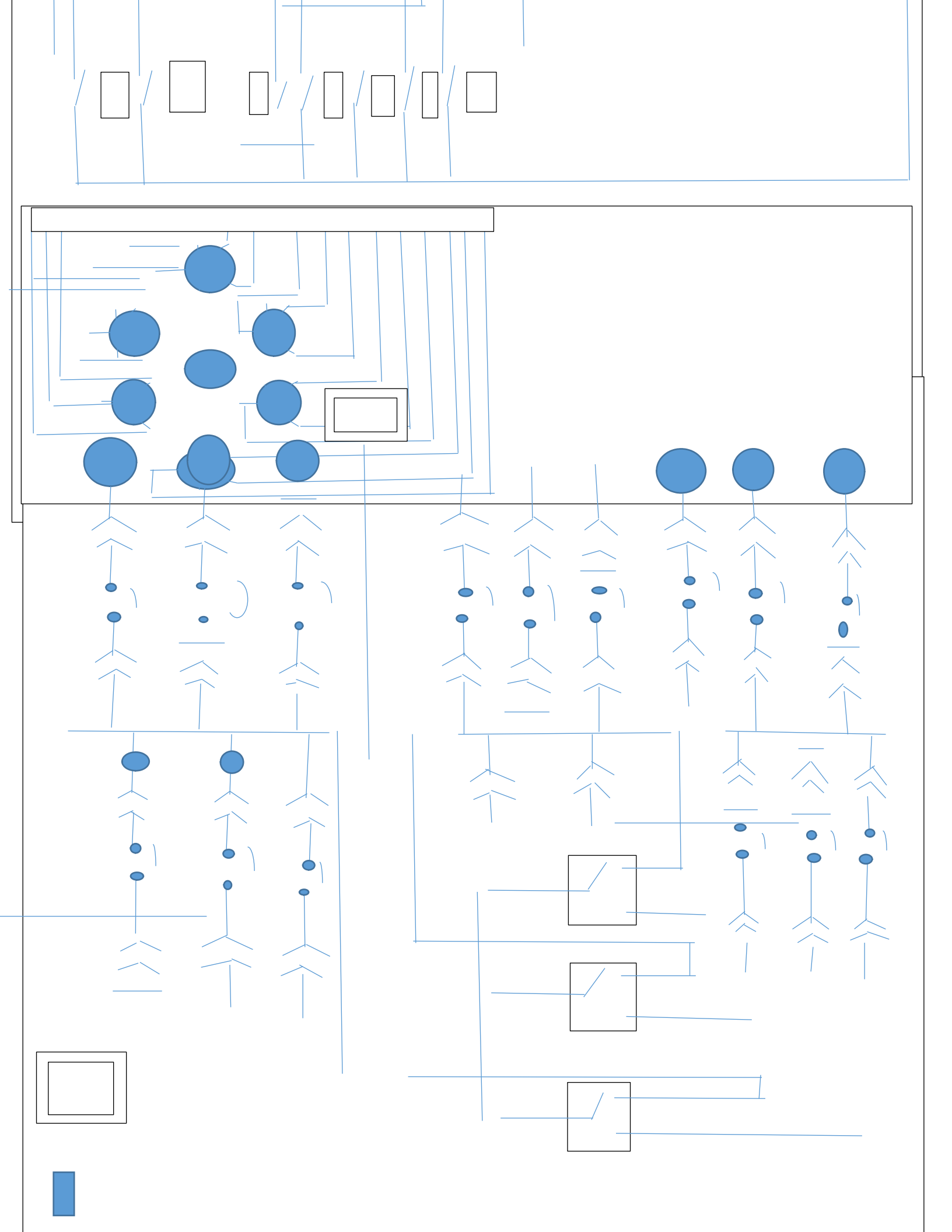


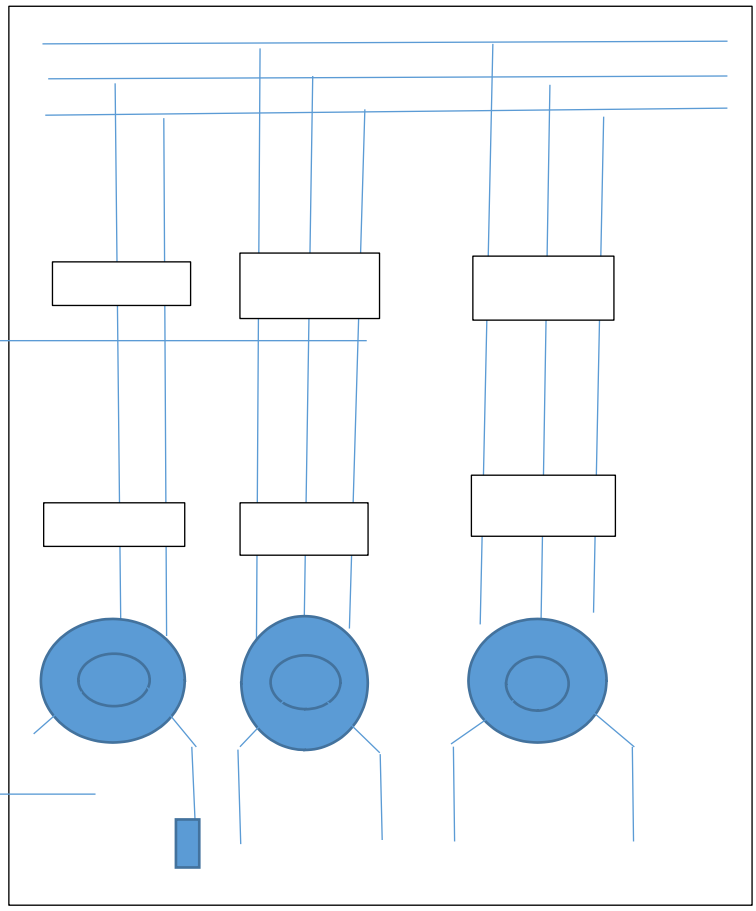


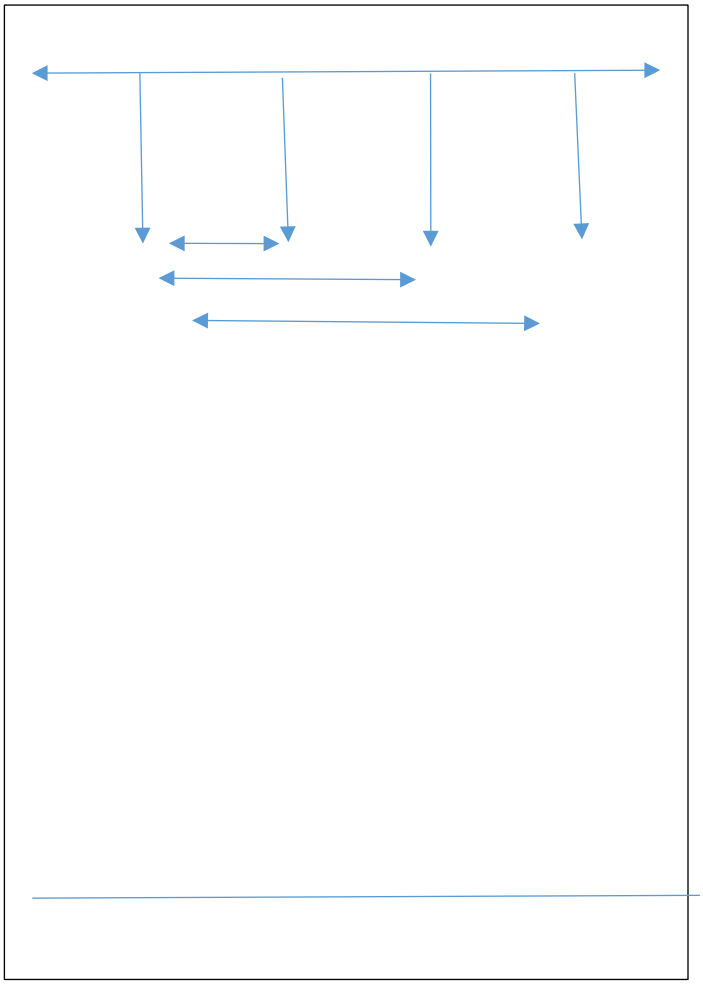


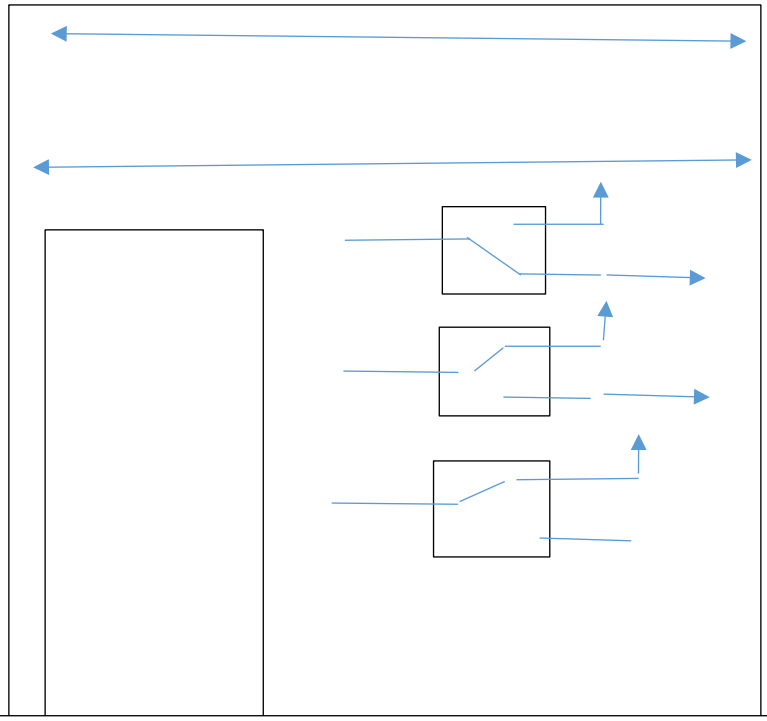


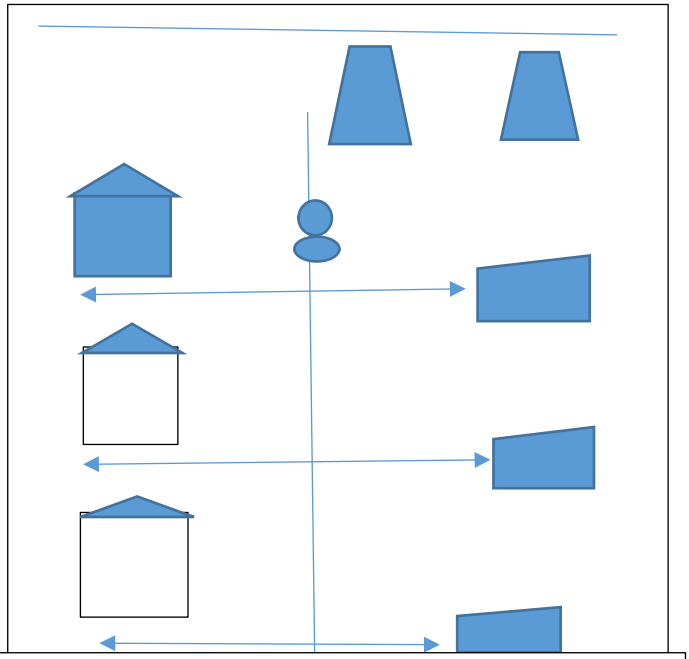


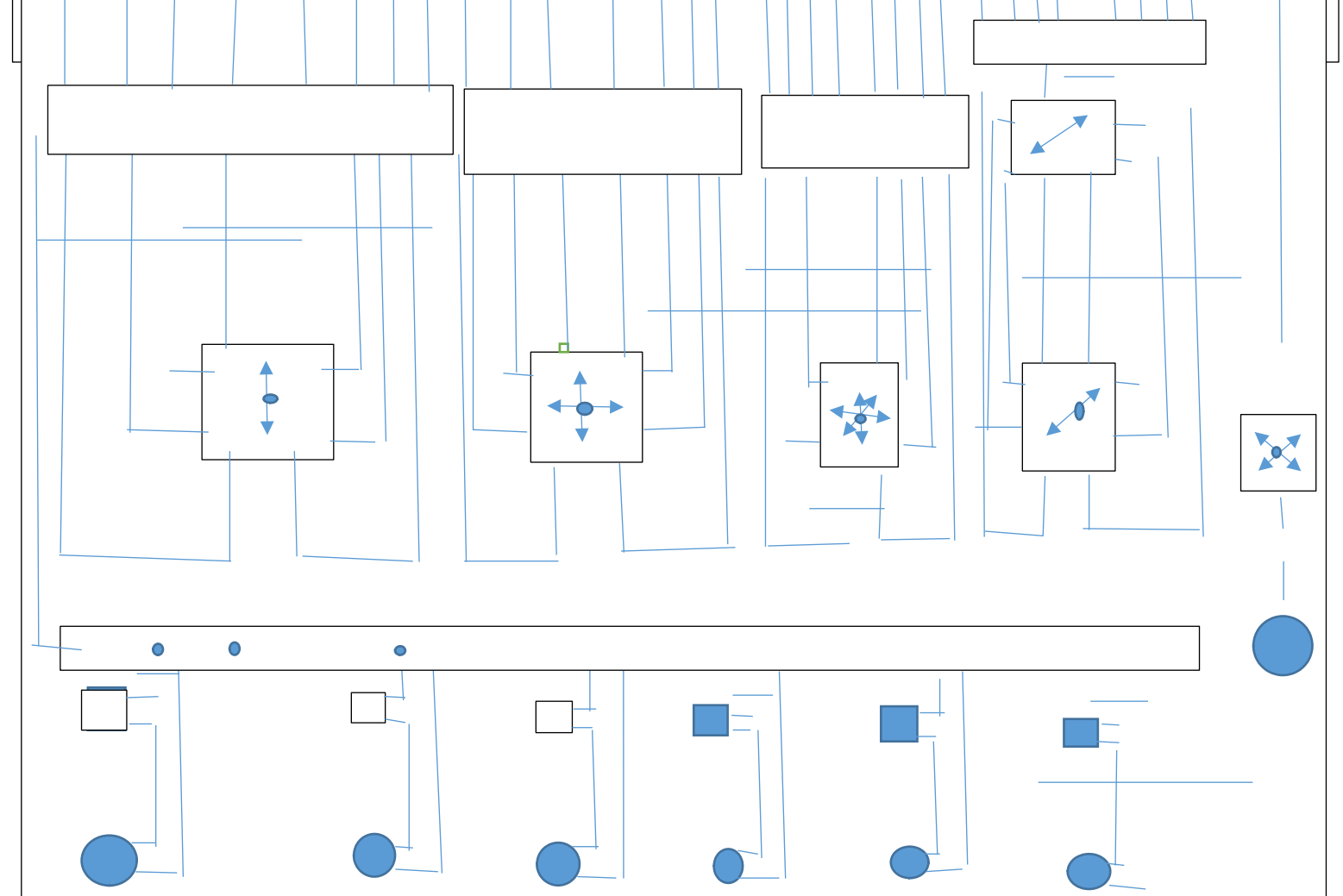


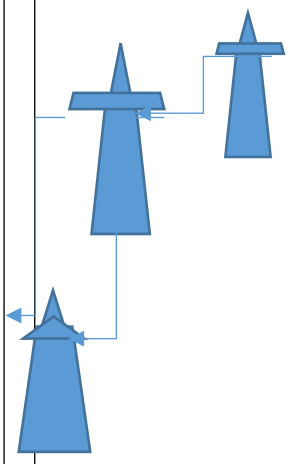


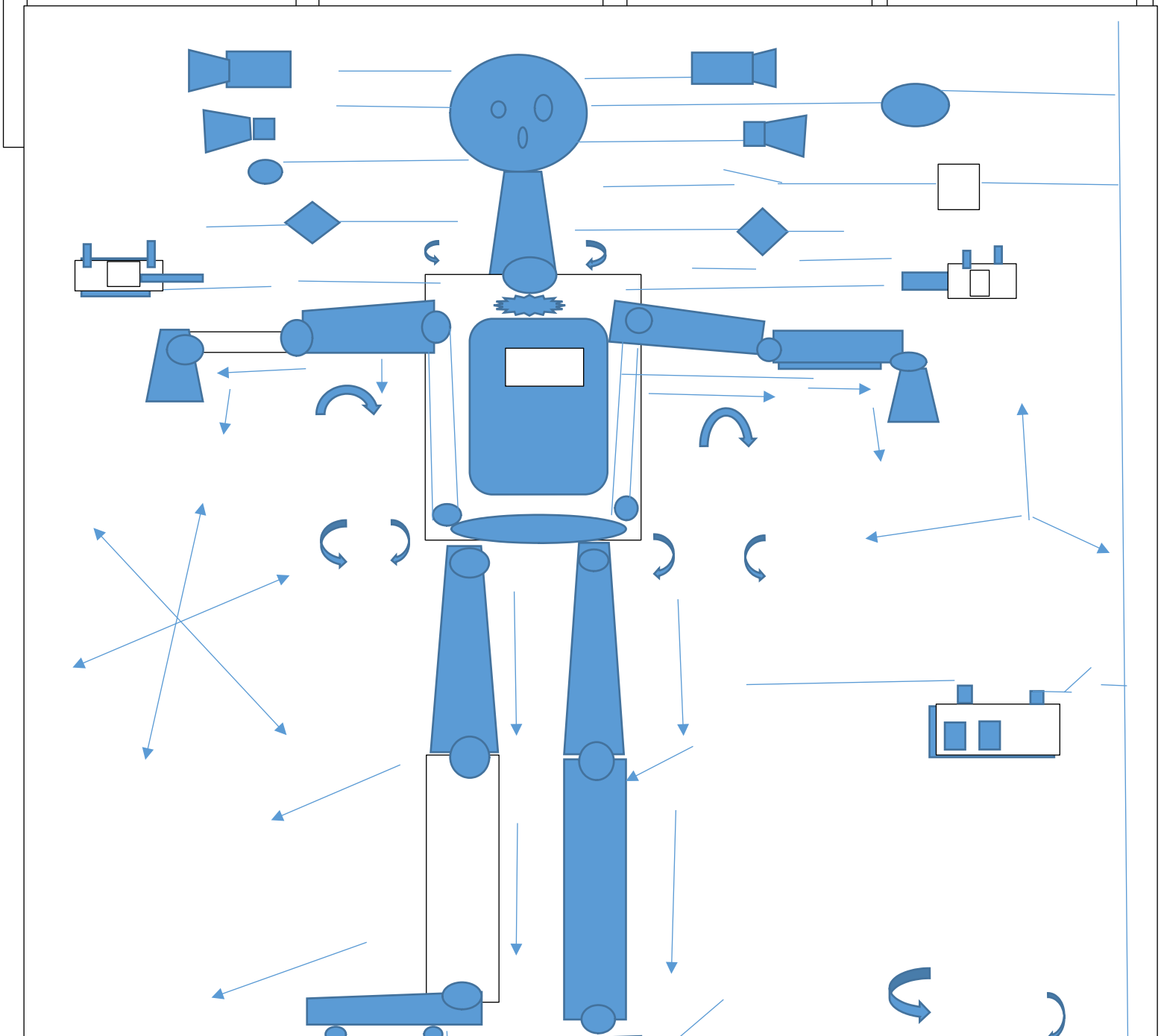


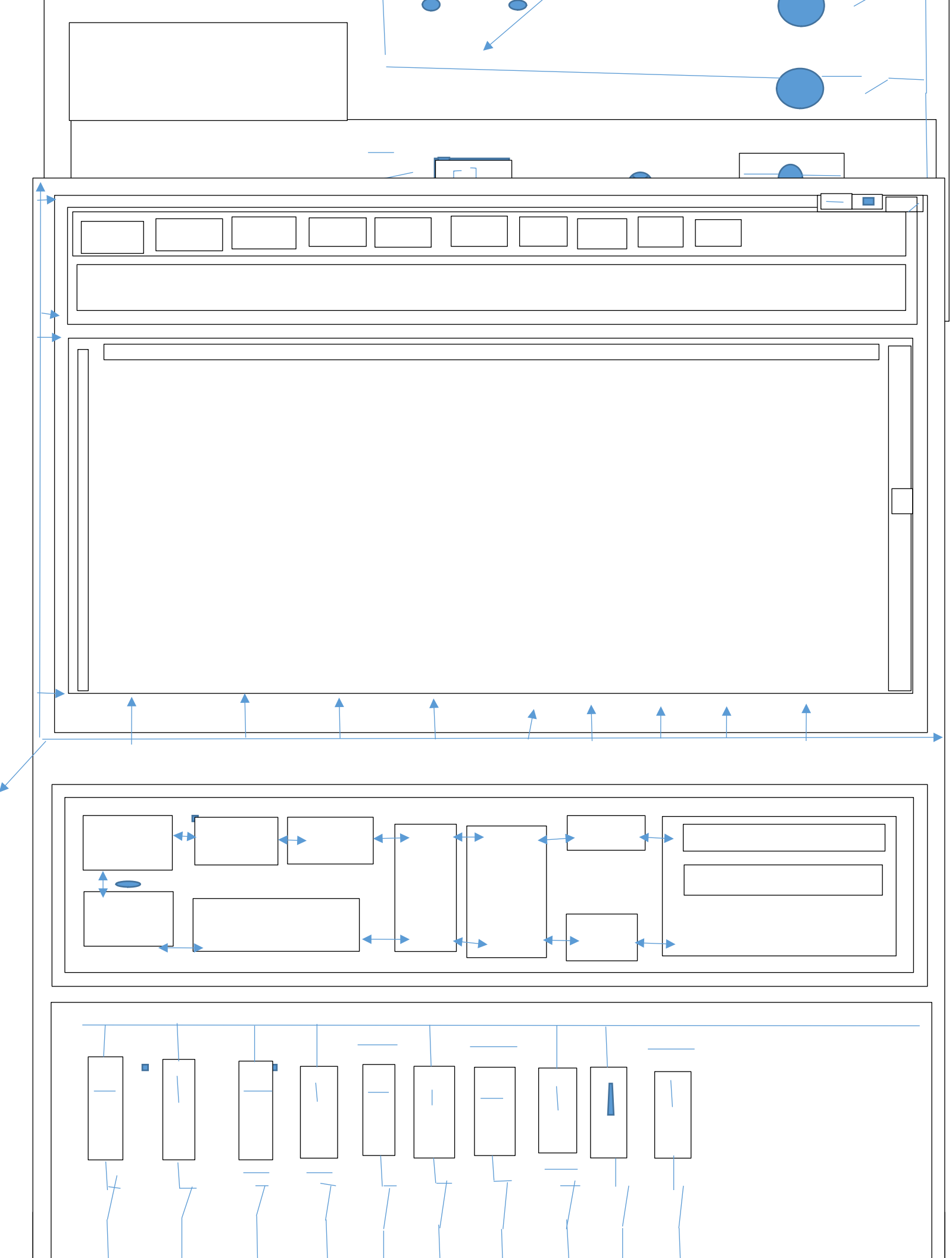


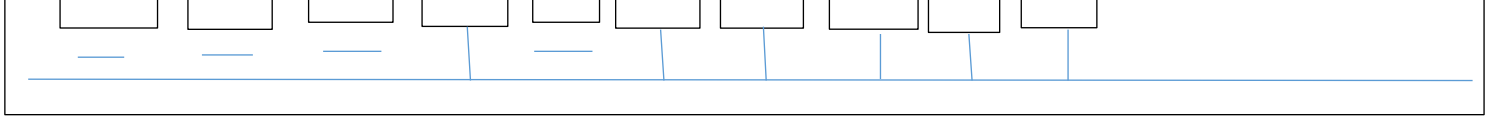


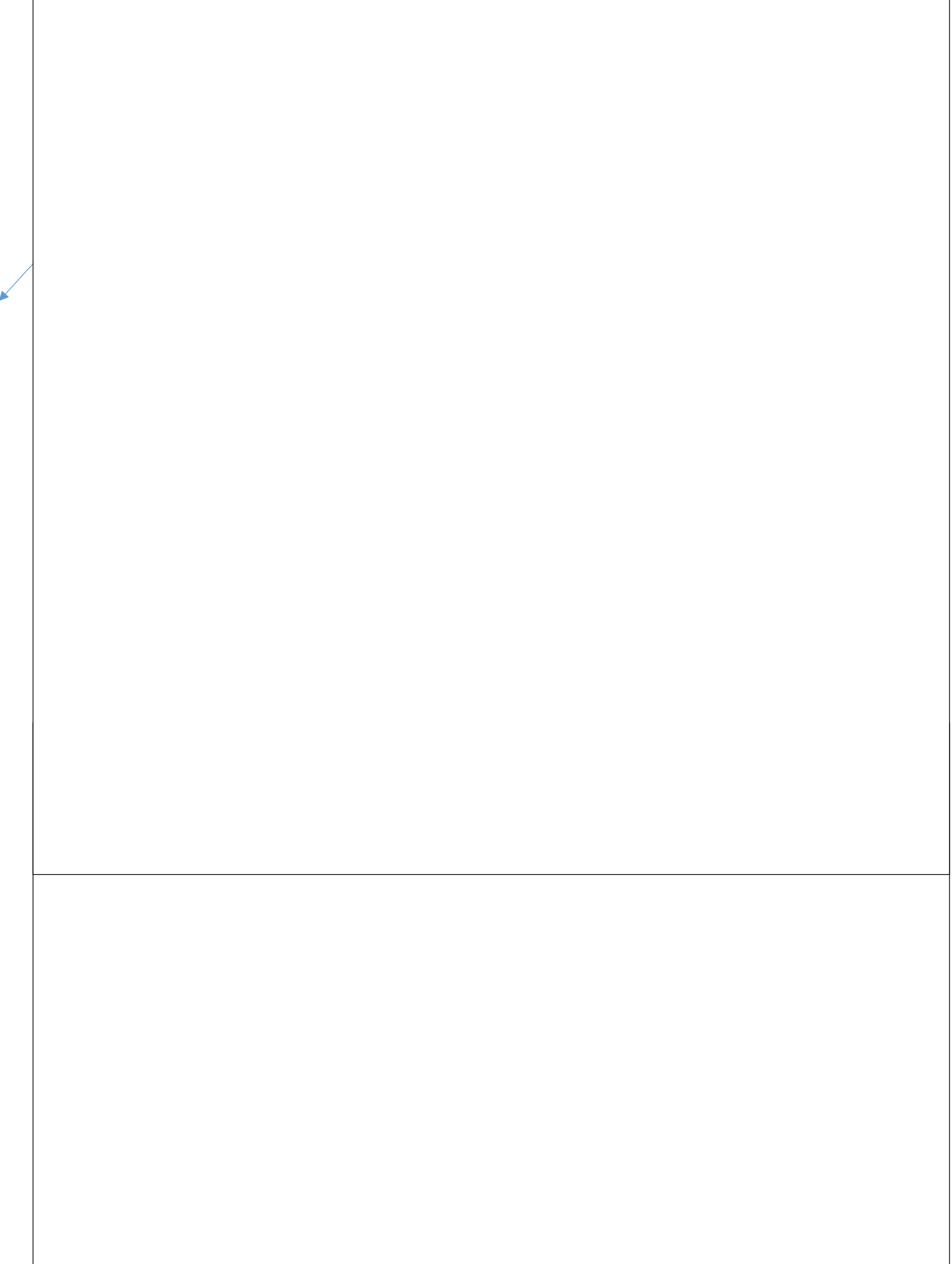


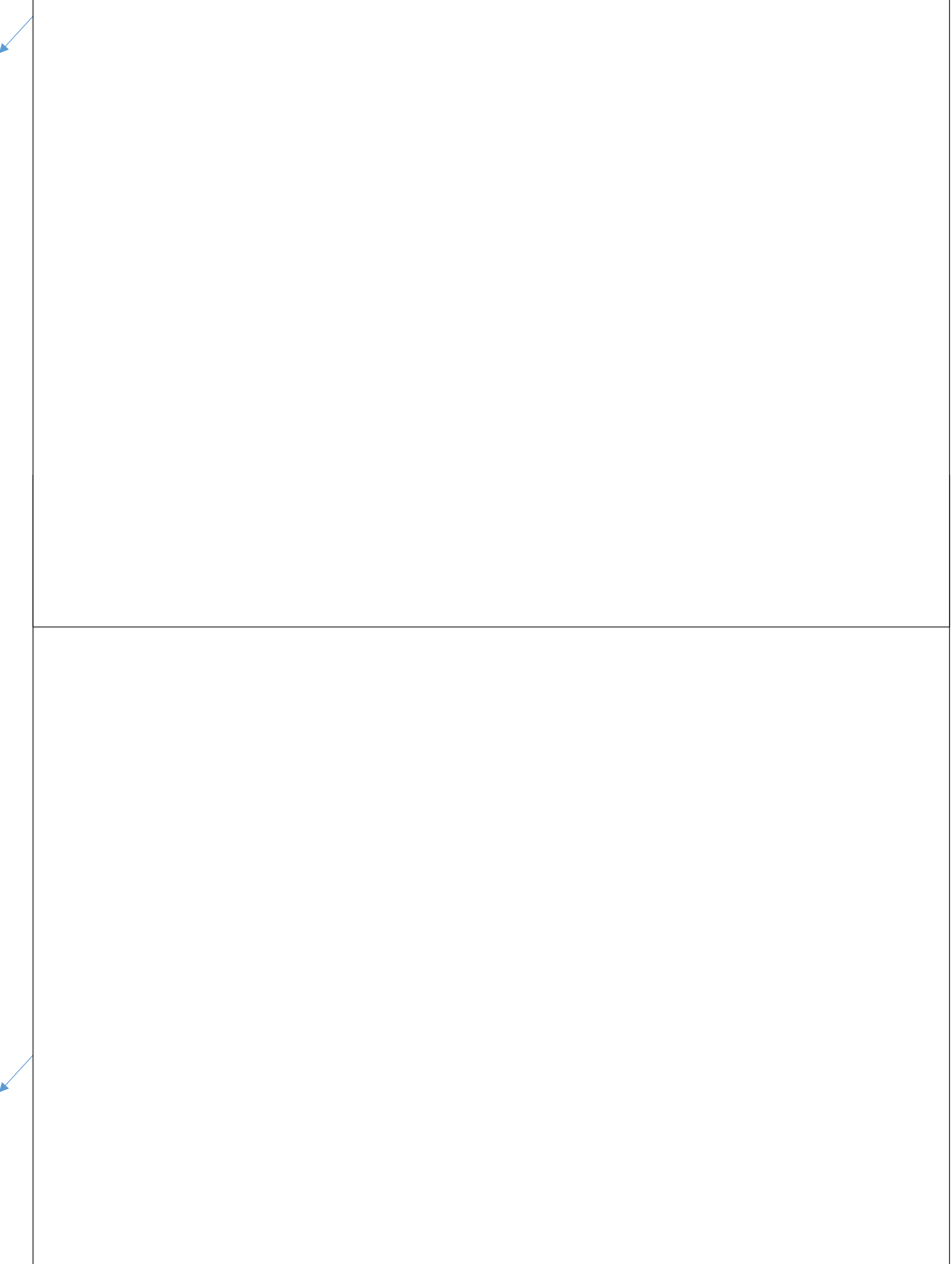


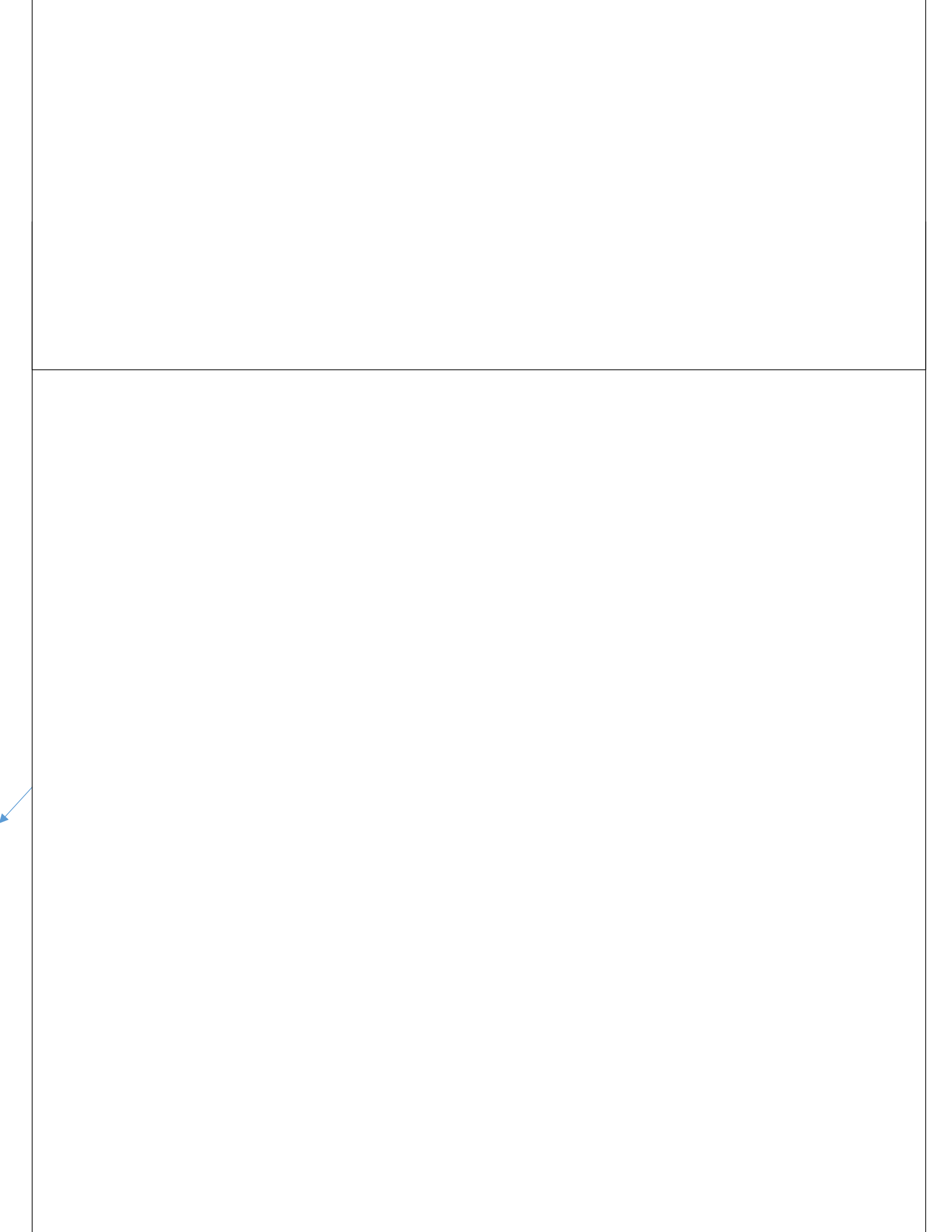


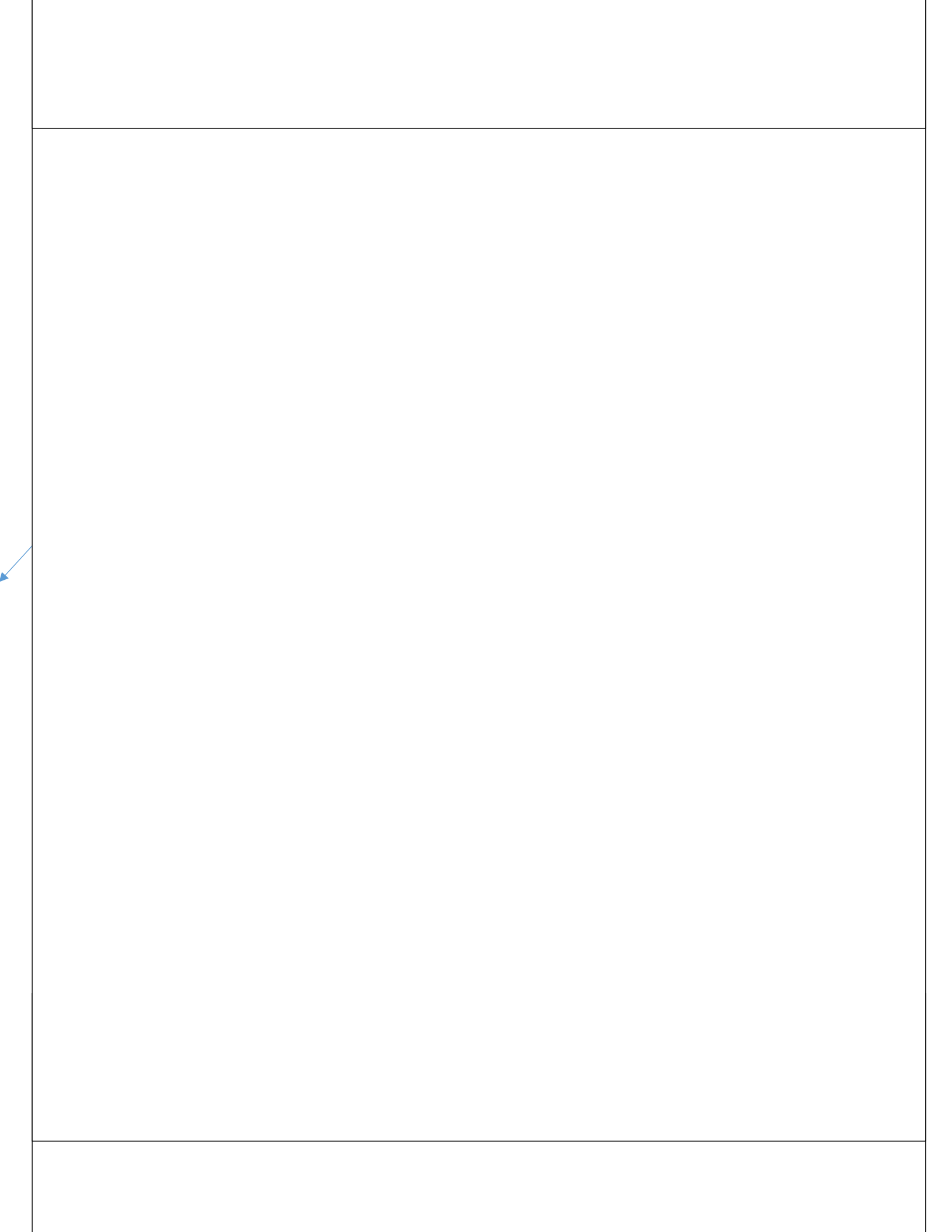


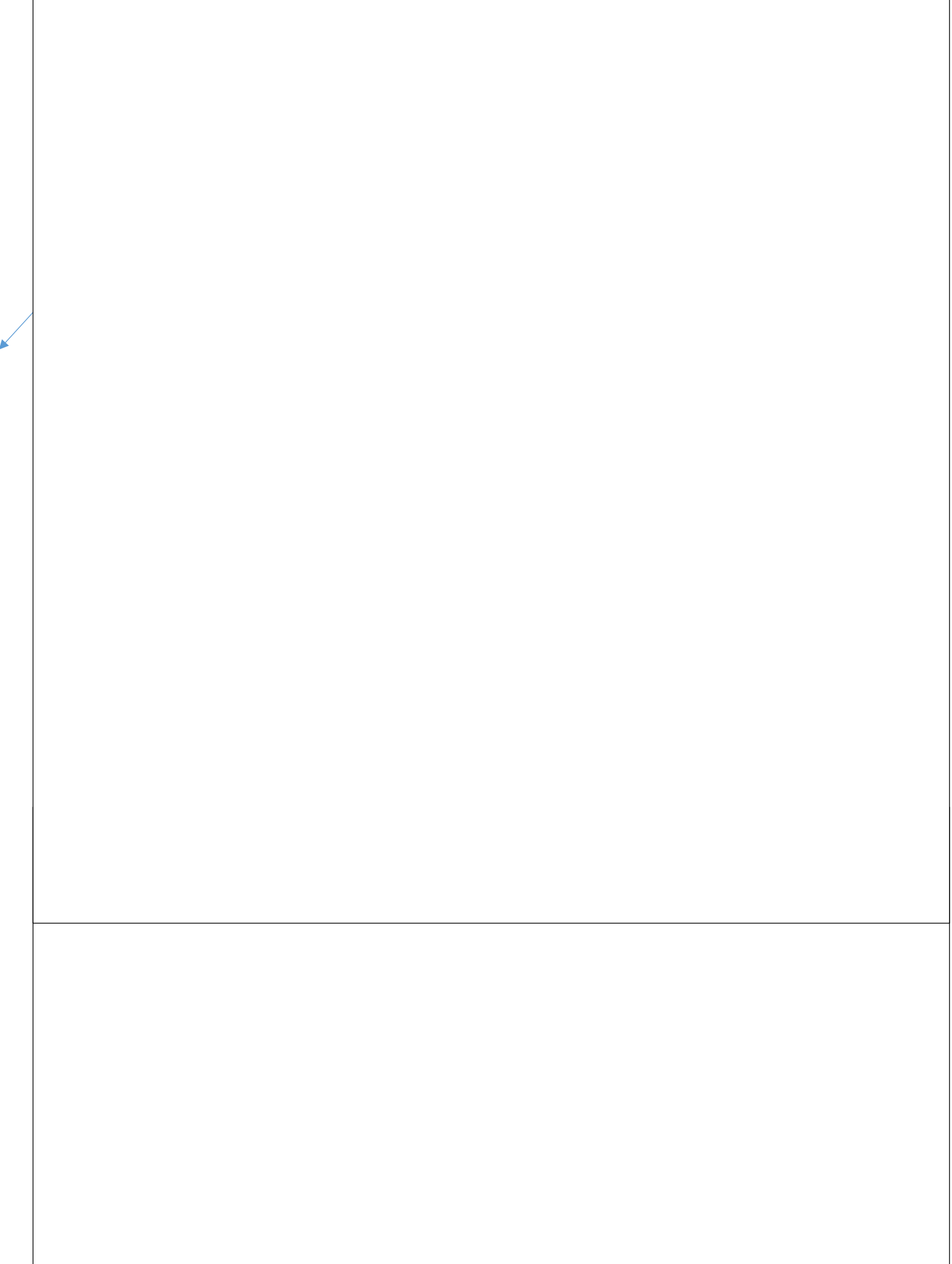


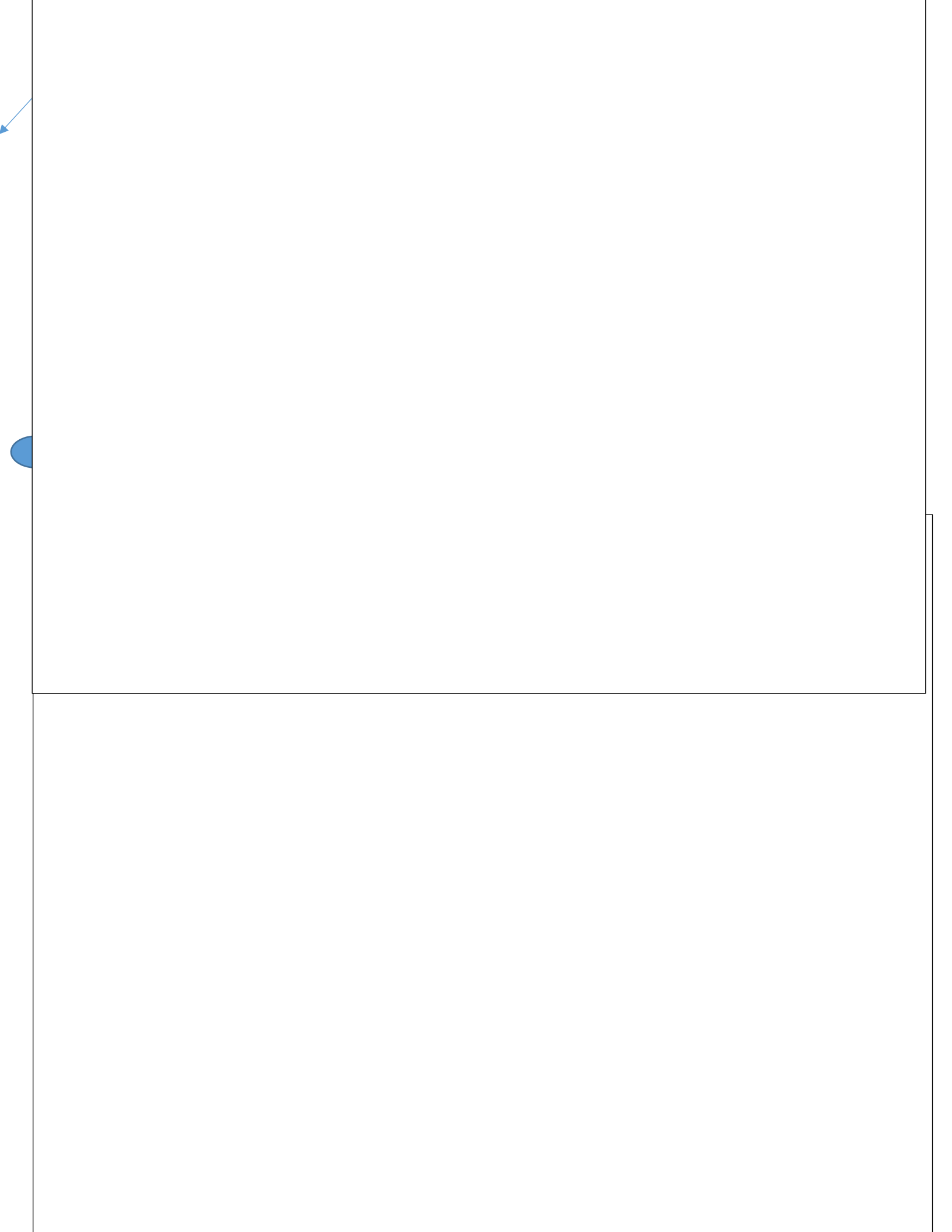












Configuration Name : My Configuration

Configuration ID : 4130bce9-de32-43a8-9b26-428cf8cdb602

Date : Wed Mar 05 08:20:59 UTC 2025

Bom Level	No.	Reference	Descr
Controller + I/O	1	LMC100CAA10000	Motio
Controller + I/O	2	ABL8WPS24200	Regul phase
Controller + I/O	3	ABL8BBU24200	batter DC, p
Controller + I/O	4	ABL8BBU24400	batter DC, p
Controller + I/O	5	ABL8RED24400	redun SMPS

Controller + I/O	6	ABL8PRP24100	electr 28.8V chann
Controller + I/O	7	ABL8BUF24400	buffer power

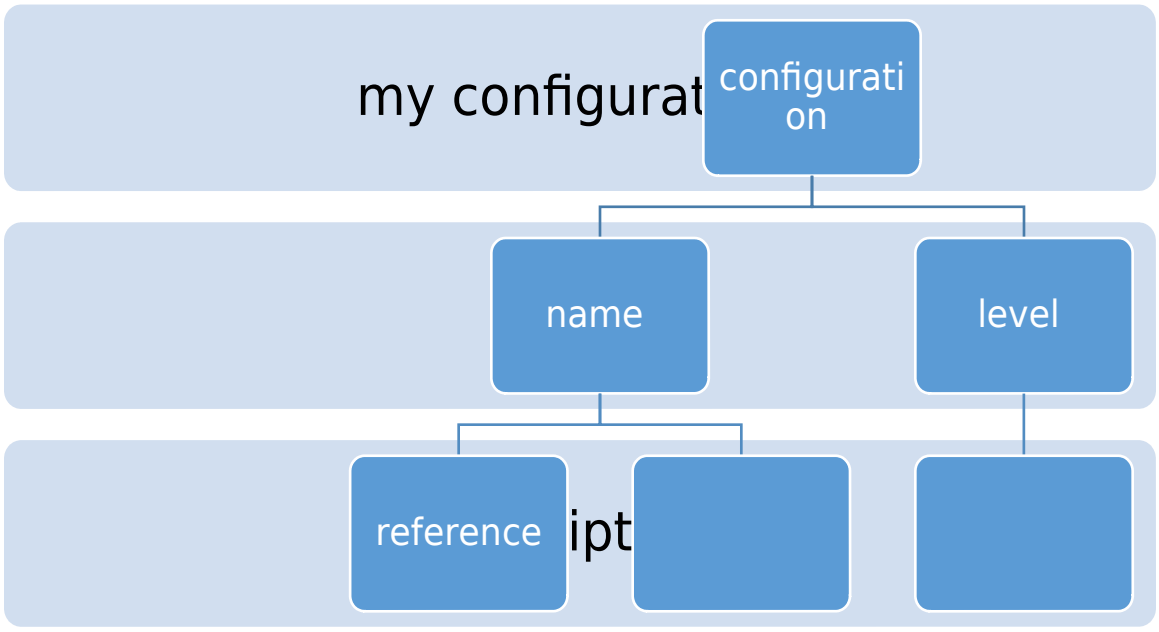
Description
Motion controller LMC100 0 axis - Acc kit - Basic
Regulated switch power supply, modicon power supply, 3 phases, 380 to 500V AC, 24V, 20A
battery control module, phaseo ABL7 ABL8, 24 to 28.8V DC, phaseo ABL7 ABL8, 24V, 20A, for regulated SMPS
battery control module, phaseo ABL7 ABL8, 24 to 28.8V DC, phaseo ABL7 ABL8, 24V, 40A, for regulated SMPS
redundancy module, phaseo ABL7 ABL8, 40A, for regulated SMPS
electronic protection module, phaseo ABL7 ABL8, 28 to 28.8V DC, 10A, for regulated SMPS, 2 pole breaking by channel
buffer module, phaseo ABL7 ABL8, 24 to 28.8V DC, 40A, for power supply

Configuration Name:	My Configuration
Configuration ID	49c77cc5-cae3-4f83-97c8-ebd0fe2c2c3c
Date:	Wed Mar 05 08:10:24 UTC 2025

Main product	Part Number	Accessories	Accessories - Part Number	Short description
Breaker	C63H31M500			Circuit breaker, ComP 70kA/415VAC, 3 poles

				trip unit 500A
Contactor	LC1G265LS EA			High power contactor (3NO), AC-3 <=440V version, 200...500V w
		Remote Wear Diagnostic (RWD) Module	LA9GRD01	Remote Wear Diagno TeSys Giga contactor
Contactor	LC1G265LS EA			High power contactor (3NO), AC-3 <=440V version, 200...500V w
Contactor	LC1G150LS EA			High power contactor (3NO), AC-3 <=440V version, 200...500V w
Thermal Relay	LR9G500			Electronic thermal ov Giga,125-500 A,class control connection

Accessories - Part Number	Short description	Quantity
	Circuit breaker, ComPacT NSX630H, 70kA/415VAC, 3 poles, MicroLogic 1.3M trip unit 500A	1
	High power contactor, TeSys Giga, 3 pole (3NO), AC-3 <=440V 265A, advanced version, 200...500V wide band AC/DC coil	1
LA9GRD01	Remote Wear Diagnostic Module (NC), for TeSys Giga contactor LC1G	1
	High power contactor, TeSys Giga, 3 pole (3NO), AC-3 <=440V 265A, advanced version, 200...500V wide band AC/DC coil	1
	High power contactor, TeSys Giga, 3 pole (3NO), AC-3 <=440V 150A, advanced version, 200...500V wide band AC/DC coil	1
	Electronic thermal overload relay,TeSys Giga,125-500 A,class 5E-30E,push-in control connection	1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Course Name	New 2024 Pricing - Classroom Training (6% increase) - pp vat
Manufacturing Execution System Software (MES)	
Ampla Performance (On Demand)	ZAR 10,500.0
Schneider Electric PLC (M340/M580/TM221,M262)	
Introduction to PLC - level 1	ZAR 10,500.0
EcoStruxure Control Expert Programming - level 2	ZAR 17,500.0
EcoStruxure Control Expert Intermediate level - level 3	ZAR 3,600.00
M580 Programming - level 4	ZAR 10,500.0
Introduction to SOMachine (On Demand)	ZAR 7,000.00
M262 Programming (On Demand)	#REF!
EcoStruxure Process Expert (Hybrid DCS)	
EcoStruxure Process Expert (On Demand)	ZAR 17,500.0
Supervisory Control & Data Acquisition software (SCADA)	
Citect Configuration 2018	ZAR 13,900.0

Citect 2018 – Workspace and Situational Awareness (On Demand)	ZAR 7,000.00
Cicode Programming (On Demand)	ZAR 7,000.00
Citect Architecture & Redundancy (On Demand)	ZAR 7,000.00
Networking Connectivity	
Principles of Ethernet Networking	ZAR 10,500.0
EcoStruxure Control Expert Modbus & CANopen configuration (On Demand) - Level 4	ZAR 10,500.0
EcoStruxure Control Expert Ethernet IP & Profibus configuration (On Demand) - Level 4	ZAR 10,500.0
Human Machine Interface (HMI)	
HMI Programming (Vijeo Designer)	ZAR 10,500.0
EcoStruxure Machine SCADA Expert (On Demand)	ZAR 13,900.0
Telemetry	
Trio Licensed Radio (On Demand)	ZAR 3,600.00
RemoteConnect – SCADAPack x70 (On Demand)	ZAR 3,600.00
Geo SCADA (On Demand)	ZAR 10,500.0
Motor Controls	
Introduction to Variable Speed Drives	ZAR 7,000.00
Altivar Process Drive Systems	ZAR 7,000.00
EcoStruxure Motor Protection Control (EMPC)	ZAR 10,500.0
Low Voltage	
Low Voltage Electrical Distribution (L.V.E.D)	ZAR 10,500.0
SPD (Surge Protection Device) (On Demand)	ZAR 2,500.00
Medium Voltage (PremSet & RM6)	
Medium Voltage Electrical Distribution (M.V.E.D.)	ZAR 10,500.0
PremSet Customer Training	ZAR 7,000.00
RM6 Customer Training	ZAR 7,000.00
Electrical Novice	
Basic Electrical Training	ZAR 3,600.00
Protection Relay	

Sepam Level 1 - (On Demand)	ZAR 7,000.00
EcoStruxure Power Monitoring Expert (PowerLogic PM3200, 5000, 8000, ION900, ION7400)	
EcoStruxure Power Monitoring Expert: Project Deployment	ZAR 17,500.0

AI Engineer Skill Assessment - Mar 4, 2025 - 1:05:49 PM		
Your overall results	Low	'10/35'
Azure AI Fundamentals	Low	'0/4'
Designing and Implementing a Microsoft Azure AI Solution	Moderate	'10/31'
Category	Link-Text	Link
Azure AI Fundamentals		https://learn.microsoft.com
Azure AI Fundamentals	Microsoft Azure AI Fundamentals: Computer Vision	https://learn.microsoft.com/e vision-microsoft-azure/
Azure AI Fundamentals	Microsoft Azure AI Fundamentals: Natural Language Processing	https://learn.microsoft.com/e language-processing/
Azure AI Fundamentals	Microsoft Azure AI Fundamentals: Document Intelligence and Knowledge Mining	https://learn.microsoft.com/e intelligence-knowledge-mini
Azure AI Fundamentals	Microsoft Azure AI Fundamentals: Generative AI	https://learn.microsoft.com/e generative-ai/
Designing and Implementing a Microsoft Azure AI		https://learn.microsoft.com

Solution		
Designing and Implementing a Microsoft Azure AI Solution	Get started with Azure AI Services	https://learn.microsoft.com/e
Designing and Implementing a Microsoft Azure AI Solution	Develop decision support solutions with Azure AI Services	https://learn.microsoft.com/e support/
Designing and Implementing a Microsoft Azure AI Solution	Create computer vision solutions with Azure AI Vision	https://learn.microsoft.com/e vision-solutions-azure-ai/
Designing and Implementing a Microsoft Azure AI Solution	Develop natural language processing solutions with Azure AI Services	https://learn.microsoft.com/e solutions-azure-ai/
Designing and Implementing a Microsoft Azure AI Solution	Implement knowledge mining with Azure Cognitive Search	https://learn.microsoft.com/e knowledge-mining-azure-cog
Designing and Implementing a Microsoft Azure AI Solution	Develop solutions with Azure AI Document Intelligence	https://learn.microsoft.com/e forms-document-intelligence
Designing and Implementing a Microsoft Azure AI Solution	Develop Generative AI solutions with Azure OpenAI Service	https://learn.microsoft.com/e azure-openai/

Category	Question	Answers
Azure AI Fundamentals	Fundamental AI Concepts	Azure Machine Learning
Azure AI Fundamentals	Fundamental AI Concepts	Azure AI Bot Service
Azure AI Fundamentals	Fundamental AI Concepts	Azure AI Language
Azure AI Fundamentals	Fundamentals of machine learning	Regression
Azure AI Fundamentals	Fundamentals of machine learning	Classification
Azure AI Fundamentals	Fundamentals of machine learning	Clustering

Azure AI Fundamentals	Fundamentals of Azure AI services	A multi-service resource tha
Azure AI Fundamentals	Fundamentals of Azure AI services	A single-service resource for
Azure AI Fundamentals	Fundamentals of Azure AI services	It's not possible to see costs
Azure AI Fundamentals	Fundamentals of Computer Vision	Timestamps in photograph r
Azure AI Fundamentals	Fundamentals of Computer Vision	Pixels
Azure AI Fundamentals	Fundamentals of Computer Vision	Image file names
Azure AI Fundamentals	Fundamentals of Facial Recognition	A pair of coordinates for eac
Azure AI Fundamentals	Fundamentals of Facial Recognition	Two pairs of coordinates for eyes
Azure AI Fundamentals	Fundamentals of Facial Recognition	A set of coordinates for each around the face
Azure AI Fundamentals	Fundamentals of optical character recognition	Azure AI Vision
Azure AI Fundamentals	Fundamentals of optical character recognition	Azure AI services
Azure AI Fundamentals	Fundamentals of optical character recognition	Azure AI Language
Azure AI Fundamentals	Fundamentals of Text Analysis with the Language Service	Sentiment analysis
Azure AI Fundamentals	Fundamentals of Text Analysis with the Language Service	Key phrase extraction
Azure AI Fundamentals	Fundamentals of Text Analysis with the Language Service	Entity detection
Azure AI Fundamentals	Fundamentals of question answering with the Language Service	"Create an empty knowledg the FAQ entries into it.
Azure AI Fundamentals	Fundamentals of question answering with the Language Service	Import the existing FAQ doc
Azure AI Fundamentals	Fundamentals of question answering with the Language Service	Import a pre-defined chit-ch
Azure AI Fundamentals	Fundamentals of conversational language understanding	Azure AI Speech
Azure AI Fundamentals	Fundamentals of conversational language understanding	Azure AI Language
Azure AI Fundamentals	Fundamentals of conversational language understanding	Azure AI services

Azure AI Fundamentals	Fundamentals of Azure AI Speech	Speech
Azure AI Fundamentals	Fundamentals of Azure AI Speech	Language
Azure AI Fundamentals	Fundamentals of Azure AI Speech	Azure AI services
Azure AI Fundamentals	Fundamentals of Azure AI Document Intelligence	Azure AI Vision resource
Azure AI Fundamentals	Fundamentals of Azure AI Document Intelligence	Azure AI Document Intelliger
Azure AI Fundamentals	Fundamentals of Azure AI Document Intelligence	Azure AI Language resource
Azure AI Fundamentals	Fundamentals of Knowledge Mining with Azure Cognitive Search	CSV
Azure AI Fundamentals	Fundamentals of Knowledge Mining with Azure Cognitive Search	SQL
Azure AI Fundamentals	Fundamentals of Knowledge Mining with Azure Cognitive Search	JSON
Azure AI Fundamentals	Fundamentals of Generative AI	Models that only work with c
Azure AI Fundamentals	Fundamentals of Generative AI	Models that only work with s
Azure AI Fundamentals	Fundamentals of Generative AI	Models that use deep learnir language on a massive scale
Azure AI Fundamentals	Fundamentals of Azure OpenAI Service	Azure OpenAI is Microsoft's v generative AI models.
Azure AI Fundamentals	Fundamentals of Azure OpenAI Service	ChatGPT and OpenAI are cha code, and images. Azure Op chatbots.
Azure AI Fundamentals	Fundamentals of Azure OpenAI Service	OpenAI is a research compa uses generative AI models. A OpenAI's AI models.
Azure AI Fundamentals	Fundamentals of Responsible Generative AI	To make a legal case that in harms caused by the solutio
Azure AI Fundamentals	Fundamentals of Responsible Generative AI	To document the purpose, e solution
Azure AI Fundamentals	Fundamentals of Responsible Generative AI	To evaluate the cost of cloud solution
Designing and Implementing a Microsoft Azure AI Solution	Prepare to develop AI solutions on Azure	Absolutely correct values ba

Designing and Implementing a Microsoft Azure AI Solution	Prepare to develop AI solutions on Azure	Randomly selected values w
Designing and Implementing a Microsoft Azure AI Solution	Prepare to develop AI solutions on Azure	Probabilistic values based or
Designing and Implementing a Microsoft Azure AI Solution	Create and consume Azure AI services	The application must specify resource.
Designing and Implementing a Microsoft Azure AI Solution	Create and consume Azure AI services	The user of the application n associated with the Azure su
Designing and Implementing a Microsoft Azure AI Solution	Create and consume Azure AI services	Access to Azure AI Services
Designing and Implementing a Microsoft Azure AI Solution	Secure Azure AI services	Switch the app to use the se
Designing and Implementing a Microsoft Azure AI Solution	Secure Azure AI services	Change the resource endpoi
Designing and Implementing a Microsoft Azure AI Solution	Secure Azure AI services	Enable a firewall
Designing and Implementing a Microsoft Azure AI Solution	Monitor Azure AI services	Create an alert.
Designing and Implementing a Microsoft Azure AI Solution	Monitor Azure AI services	Configure diagnostic setting
Designing and Implementing a Microsoft Azure AI	Monitor Azure AI services	Create a dashboard.

Solution		
Designing and Implementing a Microsoft Azure AI Solution	Deploy Azure AI services in containers	Client applications must pas endpoint before using the co
Designing and Implementing a Microsoft Azure AI Solution	Deploy Azure AI services in containers	The container must be able t to send usage data for billing
Designing and Implementing a Microsoft Azure AI Solution	Deploy Azure AI services in containers	All data passed from the clie forwarded to the Azure resou
Designing and Implementing a Microsoft Azure AI Solution	Make recommendations with Azure AI Personalizer	In the Azure portal, go to the resource, and view the Perso
Designing and Implementing a Microsoft Azure AI Solution	Make recommendations with Azure AI Personalizer	In the Azure portal, go to the resource, and view the Base
Designing and Implementing a Microsoft Azure AI Solution	Make recommendations with Azure AI Personalizer	In the Azure portal, go to the resource, and view the Rewa
Designing and Implementing a Microsoft Azure AI Solution	Analyze images	Tags
Designing and Implementing a Microsoft Azure AI Solution	Analyze images	Description
Designing and Implementing a Microsoft Azure AI Solution	Analyze images	Categories
Designing and Implementing a Microsoft Azure AI Solution	Classify images	"Image classification (multic
Designing and Implementing a	Classify images	Image classification (multila

Microsoft Azure AI Solution		
Designing and Implementing a Microsoft Azure AI Solution	Classify images	Object detection
Designing and Implementing a Microsoft Azure AI Solution	Detect objects in images	The location and class of spe
Designing and Implementing a Microsoft Azure AI Solution	Detect objects in images	The class of the main subjec
Designing and Implementing a Microsoft Azure AI Solution	Detect objects in images	The file type of an image.
Designing and Implementing a Microsoft Azure AI Solution	Detect, analyze, and recognize faces	Location
Designing and Implementing a Microsoft Azure AI Solution	Detect, analyze, and recognize faces	Type of eye-glasses
Designing and Implementing a Microsoft Azure AI Solution	Detect, analyze, and recognize faces	Occlusion
Designing and Implementing a Microsoft Azure AI Solution	Read Text in Images and Documents with the Azure AI Vision Service	Only total content and page
Designing and Implementing a Microsoft Azure AI Solution	Read Text in Images and Documents with the Azure AI Vision Service	Pages, words and lines of te
Designing and Implementing a Microsoft Azure AI Solution	Read Text in Images and Documents with the Azure AI Vision Service	Total content, pages, words

Designing and Implementing a Microsoft Azure AI Solution	Analyze video	Use the Azure AI Vision serv
Designing and Implementing a Microsoft Azure AI Solution	Analyze video	Upload the video to Azure Vi
Designing and Implementing a Microsoft Azure AI Solution	Analyze video	Store the video file in an Azu
Designing and Implementing a Microsoft Azure AI Solution	Analyze text with Azure AI Language	Use the Azure AI Language s
Designing and Implementing a Microsoft Azure AI Solution	Analyze text with Azure AI Language	Use the Azure AI Language s the comments.
Designing and Implementing a Microsoft Azure AI Solution	Analyze text with Azure AI Language	Use the Azure AI Language s comments.
Designing and Implementing a Microsoft Azure AI Solution	Build a question answering solution	Create an empty knowledge questions and answers.
Designing and Implementing a Microsoft Azure AI Solution	Build a question answering solution	Create a new knowledge bas
Designing and Implementing a Microsoft Azure AI Solution	Build a question answering solution	"Create a new knowledge ba chat source.
Designing and Implementing a Microsoft Azure AI Solution	Build a conversational language understanding model	Intents
Designing and Implementing a Microsoft Azure AI	Build a conversational language understanding model	Utterances

Solution		
Designing and Implementing a Microsoft Azure AI Solution	Build a conversational language understanding model	Entities
Designing and Implementing a Microsoft Azure AI Solution	Develop an app with Azure AI Language	Sentiment analysis
Designing and Implementing a Microsoft Azure AI Solution	Develop an app with Azure AI Language	Key phrase extraction
Designing and Implementing a Microsoft Azure AI Solution	Develop an app with Azure AI Language	Entity recognition
Designing and Implementing a Microsoft Azure AI Solution	Create a custom text classification solution	A single label classification p
Designing and Implementing a Microsoft Azure AI Solution	Create a custom text classification solution	A multiple label classificatio
Designing and Implementing a Microsoft Azure AI Solution	Create a custom text classification solution	A varied label classification p
Designing and Implementing a Microsoft Azure AI Solution	Create a custom named entity extraction solution	Recall
Designing and Implementing a Microsoft Azure AI Solution	Create a custom named entity extraction solution	Precision
Designing and Implementing a Microsoft Azure AI Solution	Create a custom named entity extraction solution	F1 score
Designing and Implementing a	Translate text with the Azure AI	Detect

Microsoft Azure AI Solution	Translator service	
Designing and Implementing a Microsoft Azure AI Solution	Translate text with the Azure AI Translator service	Translate
Designing and Implementing a Microsoft Azure AI Solution	Translate text with the Azure AI Translator service	Transliterate
Designing and Implementing a Microsoft Azure AI Solution	Create speech-enabled apps with Azure AI services	The location and one of the
Designing and Implementing a Microsoft Azure AI Solution	Create speech-enabled apps with Azure AI services	The primary and secondary
Designing and Implementing a Microsoft Azure AI Solution	Create speech-enabled apps with Azure AI services	The endpoint and one of the
Designing and Implementing a Microsoft Azure AI Solution	Translate speech with the Azure AI Speech service	SpeechConfig
Designing and Implementing a Microsoft Azure AI Solution	Translate speech with the Azure AI Speech service	SpeechTranslationConfig
Designing and Implementing a Microsoft Azure AI Solution	Translate speech with the Azure AI Speech service	AudioConfig
Designing and Implementing a Microsoft Azure AI Solution	Create an Azure Cognitive Search solution	Add a JSON file that defines container.
Designing and Implementing a Microsoft Azure AI Solution	Create an Azure Cognitive Search solution	Enable anonymous access fo

Designing and Implementing a Microsoft Azure AI Solution	Create an Azure Cognitive Search solution	In an Azure AI Services resou references the container wh
Designing and Implementing a Microsoft Azure AI Solution	Create a custom skill for Azure Cognitive Search	Create a custom skill that us predict the sentiment for a c
Designing and Implementing a Microsoft Azure AI Solution	Create a custom skill for Azure Cognitive Search	Create a custom skill that ca predict the sentiment of eac
Designing and Implementing a Microsoft Azure AI Solution	Create a custom skill for Azure Cognitive Search	Add the built-in Sentiment sk
Designing and Implementing a Microsoft Azure AI Solution	Create a knowledge store with Azure Cognitive Search	Merge
Designing and Implementing a Microsoft Azure AI Solution	Create a knowledge store with Azure Cognitive Search	Shaper
Designing and Implementing a Microsoft Azure AI Solution	Create a knowledge store with Azure Cognitive Search	Split
Designing and Implementing a Microsoft Azure AI Solution	Enrich a search index using Language Studio	Conversational language un
Designing and Implementing a Microsoft Azure AI Solution	Enrich a search index using Language Studio	Analyze sentiment.
Designing and Implementing a Microsoft Azure AI Solution	Enrich a search index using Language Studio	Custom text classification.
Designing and Implementing a Microsoft Azure AI	Implement advanced search features in Azure Cognitive Search	+

Solution		
Designing and Implementing a Microsoft Azure AI Solution	Implement advanced search features in Azure Cognitive Search	^
Designing and Implementing a Microsoft Azure AI Solution	Implement advanced search features in Azure Cognitive Search	!
Designing and Implementing a Microsoft Azure AI Solution	Build an Azure Machine Learning custom skill for Azure Cognitive Search	Real-time endpoint
Designing and Implementing a Microsoft Azure AI Solution	Build an Azure Machine Learning custom skill for Azure Cognitive Search	Web service
Designing and Implementing a Microsoft Azure AI Solution	Build an Azure Machine Learning custom skill for Azure Cognitive Search	Batch endpoint
Designing and Implementing a Microsoft Azure AI Solution	Search data outside the Azure platform in Azure Cognitive Search using Azure Data Factory	You can only upload one doc
Designing and Implementing a Microsoft Azure AI Solution	Search data outside the Azure platform in Azure Cognitive Search using Azure Data Factory	The JSON can't contain comp
Designing and Implementing a Microsoft Azure AI Solution	Search data outside the Azure platform in Azure Cognitive Search using Azure Data Factory	You have to define the index
Designing and Implementing a Microsoft Azure AI Solution	Maintain an Azure Cognitive Search Solution	Create an Azure Cognitive S service tier and at least two
Designing and Implementing a Microsoft Azure AI Solution	Maintain an Azure Cognitive Search Solution	Create an Azure Cognitive S tier and at least three replica
Designing and Implementing a	Maintain an Azure Cognitive Search	Create an Azure Cognitive S

Microsoft Azure AI Solution	Solution	tier and one replica.
Designing and Implementing a Microsoft Azure AI Solution	Use semantic search to get better search results in Azure Cognitive Search	Up to 50.
Designing and Implementing a Microsoft Azure AI Solution	Use semantic search to get better search results in Azure Cognitive Search	As many results as the BM25
Designing and Implementing a Microsoft Azure AI Solution	Use semantic search to get better search results in Azure Cognitive Search	Up to 25.
Designing and Implementing a Microsoft Azure AI Solution	Improve search results using vector search in Azure Cognitive Search	To create a search to match
Designing and Implementing a Microsoft Azure AI Solution	Improve search results using vector search in Azure Cognitive Search	When you need to find matc search index.
Designing and Implementing a Microsoft Azure AI Solution	Improve search results using vector search in Azure Cognitive Search	To upload and index a docur
Designing and Implementing a Microsoft Azure AI Solution	Plan an Azure AI Document Intelligence solution	A Read model.
Designing and Implementing a Microsoft Azure AI Solution	Plan an Azure AI Document Intelligence solution	A Layout model.
Designing and Implementing a Microsoft Azure AI Solution	Plan an Azure AI Document Intelligence solution	A Composed model.
Designing and Implementing a Microsoft Azure AI Solution	Use prebuilt Azure AI Document Intelligence models	Read model.

Designing and Implementing a Microsoft Azure AI Solution	Use prebuilt Azure AI Document Intelligence models	General document model.
Designing and Implementing a Microsoft Azure AI Solution	Use prebuilt Azure AI Document Intelligence models	ID document model.
Designing and Implementing a Microsoft Azure AI Solution	Extract data from forms with Azure Document Intelligence	Train Model and Get Model L
Designing and Implementing a Microsoft Azure AI Solution	Extract data from forms with Azure Document Intelligence	Analyze Invoice and Get Ana
Designing and Implementing a Microsoft Azure AI Solution	Extract data from forms with Azure Document Intelligence	Create Azure Document Inte
Designing and Implementing a Microsoft Azure AI Solution	Create a composed Form Recognizer model	modelId
Designing and Implementing a Microsoft Azure AI Solution	Create a composed Form Recognizer model	status
Designing and Implementing a Microsoft Azure AI Solution	Create a composed Form Recognizer model	docType
Designing and Implementing a Microsoft Azure AI Solution	Build an Azure AI Document Intelligence custom skill for Azure Cognitive Search	formUrl
Designing and Implementing a Microsoft Azure AI Solution	Build an Azure AI Document Intelligence custom skill for Azure Cognitive Search	recordId
Designing and Implementing a Microsoft Azure AI	Build an Azure AI Document Intelligence custom skill for Azure Cognitive Search	formSasToken

Solution		
Designing and Implementing a Microsoft Azure AI Solution	Get started with Azure OpenAI Service	text-davinci-003
Designing and Implementing a Microsoft Azure AI Solution	Get started with Azure OpenAI Service	gpt-35-turbo
Designing and Implementing a Microsoft Azure AI Solution	Get started with Azure OpenAI Service	text-embedding-ada-002 (Ve
Designing and Implementing a Microsoft Azure AI Solution	Build natural language solutions with Azure OpenAI Service	Chat, Embedding, and Comp
Designing and Implementing a Microsoft Azure AI Solution	Build natural language solutions with Azure OpenAI Service	Key, Endpoint, and Deploym
Designing and Implementing a Microsoft Azure AI Solution	Build natural language solutions with Azure OpenAI Service	Summary, Deployment nam
Designing and Implementing a Microsoft Azure AI Solution	Apply prompt engineering with Azure OpenAI Service	By using complex instructior
Designing and Implementing a Microsoft Azure AI Solution	Apply prompt engineering with Azure OpenAI Service	By providing clear and descr
Designing and Implementing a Microsoft Azure AI Solution	Apply prompt engineering with Azure OpenAI Service	By using vague prompts
Designing and Implementing a Microsoft Azure AI Solution	Generate code with Azure OpenAI Service	Increase in efficiency and pr
Designing and Implementing a	Generate code with Azure OpenAI	Increase in bugs and readab

Microsoft Azure AI Solution	Service	
Designing and Implementing a Microsoft Azure AI Solution	Generate code with Azure OpenAI Service	Increase in time spent codin
Designing and Implementing a Microsoft Azure AI Solution	Generate images with Azure OpenAI Service	DALL-E
Designing and Implementing a Microsoft Azure AI Solution	Generate images with Azure OpenAI Service	GPT-35-Turbo
Designing and Implementing a Microsoft Azure AI Solution	Generate images with Azure OpenAI Service	Text-Davinci
Designing and Implementing a Microsoft Azure AI Solution	Use your own data with Azure OpenAI Service	Create their own AI chat mo
Designing and Implementing a Microsoft Azure AI Solution	Use your own data with Azure OpenAI Service	Access Azure OpenAI withou
Designing and Implementing a Microsoft Azure AI Solution	Use your own data with Azure OpenAI Service	Use supported AI chat mode data
Designing and Implementing a Microsoft Azure AI Solution	Fundamentals of Responsible Generative AI	To make a legal case that in harms caused by the solutio
Designing and Implementing a Microsoft Azure AI Solution	Fundamentals of Responsible Generative AI	To document the purpose, e solution.
Designing and Implementing a Microsoft Azure AI Solution	Fundamentals of Responsible Generative AI	To evaluate the cost of cloud solution.

Azure VMware Solution (AVS) | Microsoft Partner - Mar 4, 2025 - 1:22:59 PM		
Your overall results	Excellent	'6/6'
AVS | Readiness Resources	Excellent	'8/10'
AVS | Marketplace Offer Development Resources	Excellent	'3/3'
AVS | Specialization Resources	Excellent	'4/4'
AVS | Cosell Acceleration Resources	Excellent	'9/9'
Category	Link-Text	Link
AVS | Readiness Resources	Introduction	https://learn.mic
AVS | Readiness Resources	Learning Resources	https://aka.ms/A
AVS | Readiness Resources	Learning Path	https://aka.ms/A
AVS | Readiness Resources	Overview Video	https://aka.ms/A
AVS | Readiness Resources	AVS Academy	https://aka.ms/A
AVS | Readiness Resources	VMware for Azure VMware Solution Master Specialist Exam	https://aka.ms/A
AVS | Readiness Resources	VMware TechZone	https://aka.ms/A

AVS | Readiness Resources	Landing Zone Accelerator	https://aka.ms/A
AVS | Readiness Resources	Landing Zone Accelerator GitHub Repository	https://aka.ms/A
AVS | Readiness Resources	Landing Zone Assessment Review	https://aka.ms/A
AVS | Readiness Resources	Landing Zone Assessment Network Design Guide	https://aka.ms/A
AVS | Readiness Resources	Deployment Checklist	https://aka.ms/A
AVS | Readiness Resources	Azure Well-Architected Assessment for AVS	https://aka.ms/A
AVS | Readiness Resources	Azure Well-Architected Documentation for AVS	https://aka.ms/A
AVS | Readiness Resources	Azure Proactive Resiliency Library for AVS	https://aka.ms/A
AVS | Readiness Resources	AVS Updates	https://aka.ms/A
AVS | Readiness Resources	Migrating VMware vSphere workloads to Azure VMware Solution	https://learn.mic scenarios/azure-
AVS | Readiness Resources	Extending hybrid and multi-cloud agility	https://learn.mic with-azure
AVS | Readiness Resources	High availability and disaster recovery for VMware workloads	https://learn.mic using-vmware-si
AVS | Readiness Resources	Azure VMware Solution for Desktop virtualization	https://learn.mic solution-horizon
AVS | Readiness Resources	AVS LAB Automation	https://github.co
AVS | Readiness Resources	VMware AVS Hands-on Labs	https://aka.ms/A
AVS | Readiness Resources	AVS Workshop Lab Guide	https://aka.ms/A
AVS | Marketplace Offer Development Resources	Sell through the commercial marketplace	https://learn.mic marketplace/
AVS | Marketplace Offer Development Resources	Plan a Consulting Service Offer, applicable for AVS Service	https://learn.mic consulting-servic
AVS | Marketplace Offer Development Resources	Partner Got-To-Market Toolbox	http://aka.ms/gtr
AVS | Specialization Resources	Specialization Overview	https://aka.ms/A
AVS | Specialization Resources	Specialization Video	https://aka.ms/A
AVS | Specialization Resources	Specialization Audit Checklist	https://aka.ms/A
AVS | Specialization Resources	Specialization Assessment	https://aka.ms/A

AVS | Cosell Acceleration Resources	AVS Customer Story	https://aka.ms/A
AVS | Cosell Acceleration Resources	IDC white paper: The Business Value of Azure VMware Solution	https://aka.ms/A
AVS | Cosell Acceleration Resources	Digital Marketing Campaign (On Demand)	https://aka.ms/A
AVS | Cosell Acceleration Resources	AVS Pricing Reference	https://aka.ms/A
AVS | Cosell Acceleration Resources	AVS Go Big for Partners	https://aka.ms/A
AVS | Cosell Acceleration Resources	AVS Partner Assets Collection	https://aka.ms/A
AVS | Cosell Acceleration Resources	AVS Pros (LinkedIn Group)	https://aka.ms/A
AVS | Cosell Acceleration Resources	Partners Incentives and Programs	https://aka.ms/P
AVS | Cosell Acceleration Resources	AVS Bootcamp Sales Track	https://aka.ms/a
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Category	Question	Answers
AVS | Readiness Resources	Opportunity and Use Cases	Migrating VMwar
AVS | Readiness Resources	Opportunity and Use Cases	Extending hybrid
AVS | Readiness Resources	Opportunity and Use Cases	High availability
AVS | Readiness Resources	Opportunity and Use Cases	Desktop virtualiz
AVS | Readiness Resources	Opportunity and Use Cases	Azure Migrate ar
AVS | Readiness Resources	Training Resources	Introduction
AVS | Readiness Resources	Training Resources	Learning Path
AVS | Readiness Resources	Training Resources	Learning Resour
AVS | Readiness Resources	Training Resources	Overview Video
AVS | Readiness Resources	Training Resources	AVS Academy
AVS | Readiness Resources	Training Resources	VMware TechZon

AVS | Readiness Resources	Training Resources	VMware for Azur
AVS | Readiness Resources	Training Resources	AVS LAB Automa
AVS | Readiness Resources	Training Resources	VMware AVS Har
AVS | Readiness Resources	Training Resources	AVS Workshop La
AVS | Readiness Resources	Deployment Guidance	Landing Zone Ac
AVS | Readiness Resources	Deployment Guidance	Landing Zone Ac
AVS | Readiness Resources	Deployment Guidance	Landing Zone As
AVS | Readiness Resources	Deployment Guidance	Landing Zone As
AVS | Readiness Resources	Deployment Guidance	Deployment Che
AVS | Readiness Resources	Deployment Guidance	Azure Well-Archi
AVS | Readiness Resources	Deployment Guidance	Azure Well-Archi
AVS | Readiness Resources	Deployment Guidance	Azure Proactive
AVS | Readiness Resources	Deployment Guidance	VMware Workloa
AVS | Readiness Resources	Deployment Guidance	AVS Updates
AVS | Marketplace Offer Development Resources	Marketplace Training and Support Resources	Sell through the
AVS | Marketplace Offer Development Resources	Marketplace Training and Support Resources	Plan a Consulting
AVS | Marketplace Offer Development Resources	Marketplace Training and Support Resources	Partner Got-To-M
AVS | Specialization Resources	AVS Specialization details	Specialization O
AVS | Specialization Resources	AVS Specialization details	Specialization V
AVS | Specialization Resources	AVS Specialization details	Specialization A
AVS | Specialization Resources	AVS Specialization details	Specialization As
AVS | Cosell Acceleration Resources	Go-To-Market Assets & Recommended Sellers Training	AVS Customer St
AVS | Cosell Acceleration Resources	Go-To-Market Assets & Recommended Sellers Training	IDC white paper:

AVS | Cosell Acceleration Resources	Go-To-Market Assets & Recommended Sellers Training	Digital Marketing
AVS | Cosell Acceleration Resources	Go-To-Market Assets & Recommended Sellers Training	AVS Pricing Refe
AVS | Cosell Acceleration Resources	Go-To-Market Assets & Recommended Sellers Training	AVS Go Big for P
AVS | Cosell Acceleration Resources	Go-To-Market Assets & Recommended Sellers Training	AVS Partner Asse
AVS | Cosell Acceleration Resources	Go-To-Market Assets & Recommended Sellers Training	AVS Pros (Linked
AVS | Cosell Acceleration Resources	Go-To-Market Assets & Recommended Sellers Training	Partners Incentiv
AVS | Cosell Acceleration Resources	Go-To-Market Assets & Recommended Sellers Training	AVS Bootcamp S

Microsoft Cloud for Sustainability Adoption Guide |					

Microsoft Partners - Mar 4, 2025 - 12:03:23 PM					
Your overall results	Excellent	'3/3'			
Sustainability Readiness Resources	Excellent	'3/4'			
Marketplace Offer Development Resources	Excellent	'3/3'			
Sustainability Cosell Acceleration Resources	Excellent	'2/2'			
Category	Link-Text	Link	Priority	ReportingCategory	ReportingSubcategory
Sustaina	This is AI ... for	https://info.microsoft.com/ww-	High		

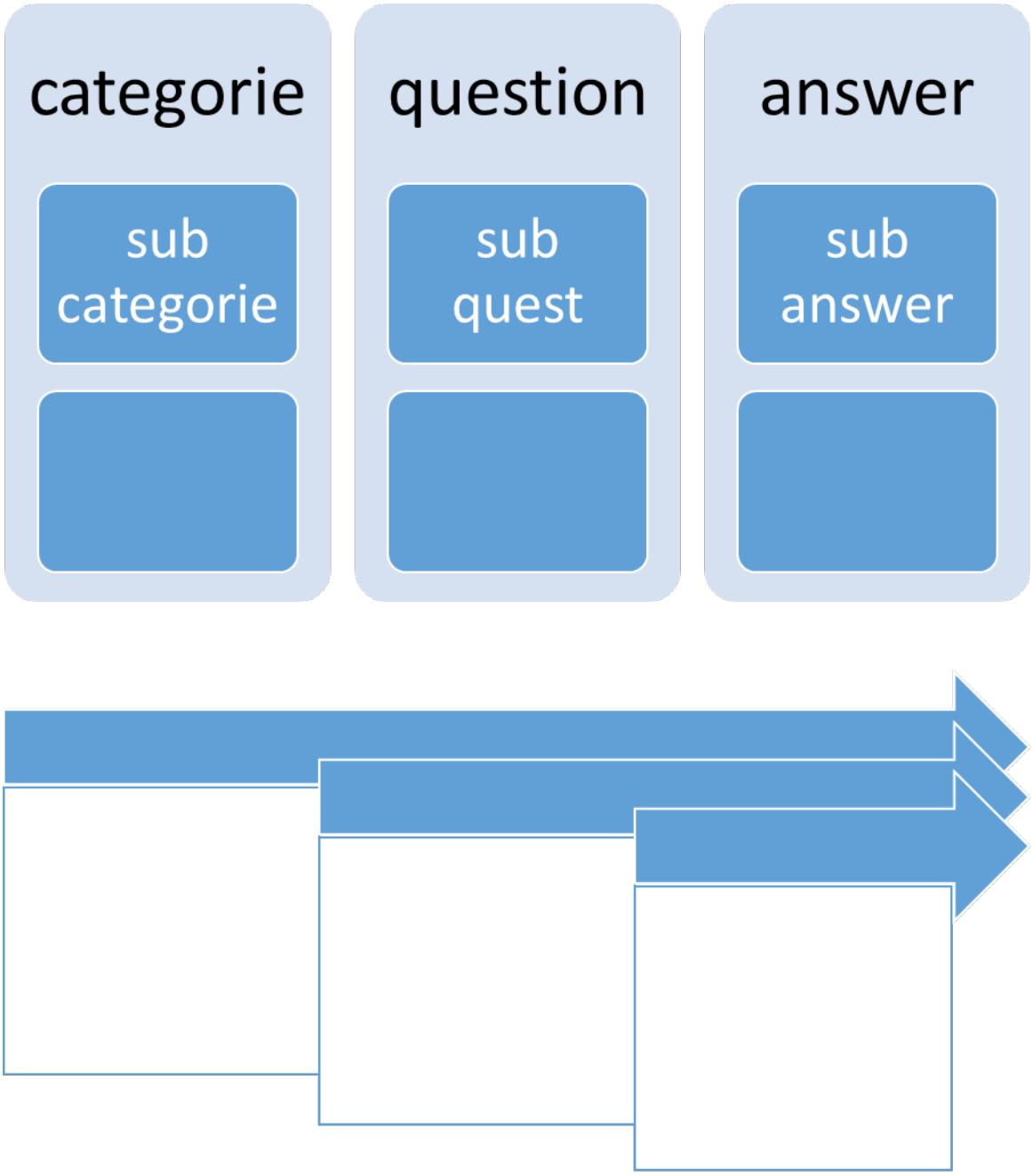
bility Readiness Resources	Sustainability	landing-this-is-AI-for-sustainability.html?ocid=cmmop4zodtb			
Sustainability Readiness Resources	Microsoft Cloud for Sustainability: ESG and the Future of Business	https://www.linkedin.com/learning/microsoft-cloud-for-sustainability-esg-and-the-future-of-business	High		
Sustainability Readiness Resources	Microsoft Cloud for Sustainability Training Collection	https://aka.ms/mcfslearningpaths	High		
Sustainability Readiness Resources	Pre-sales licenses for Sustainability Manager sandbox Environments for Microsoft Partners	https://experience.dynamics.com/requestlicense/	High		
Sustainability Readiness Resources	Well-Architected for Microsoft Cloud for Sustainability	https://learn.microsoft.com/en-us/industry/well-architected/sustainability/	High		
Sustainability Readiness Resources	Roadmap: What's new in Microsoft Cloud for Sustainability overview	https://learn.microsoft.com/en-us/industry/sustainability/whats-new	High		
Sustainability Readiness Resources	Fabric Technical Resources	https://learn.microsoft.com/en-us/credentials/certifications/fabric-analytics-engineer-associate/?practice-assessment-type=certification	High		
Sustainability Readiness	Microsoft Cloud for Sustainability Technical Summit	https://aka.ms/mcfstechsummit	High		

Resources					
Marketplace Offer Development Resources	Sell Through the Commercial Marketplace	https://learn.microsoft.com/en-us/training/paths/sell-through-commercial-marketplace/	High		
Marketplace Offer Development Resources	Microsoft Commercial Marketplace Publisher FAQ	https://learn.microsoft.com/en-us/partner-center/marketplace/marketplace-faq-publisher-guide	High		
Marketplace Offer Development Resources	Mastering the Marketplace: Office Hours	https://aka.ms/MTMofficehours	High		
Sustainability Cosell Acceleration Resources	Sustainability Marketing Campaigns	https://partner.microsoft.com/en-us/asset/collection/sustainability-marketing-campaigns#/	High		
Sustainability Cosell Acceleration Resources	Recommended Training for Sellers: Get started with Microsoft Cloud for Sustainability	https://learn.microsoft.com/en-us/training/paths/get-started-sustainability/	High		

Category	Question	Answers	Selected Answer	Note	
Sustainability Readiness	Opportunity and Use Cases	This is AI … for Sustainability	This is AI … for Sustainability		

Resources					
Sustainability Readiness Resources	Opportunity and Use Cases	Microsoft Cloud for Sustainability: ESG and the Future of Business	Microsoft Cloud for Sustainability: ESG and the Future of Business		
Sustainability Readiness Resources	Training Resources	Microsoft Cloud for Sustainability Training Collection	Microsoft Cloud for Sustainability Training Collection		
Sustainability Readiness Resources	Training Resources	Pre-sales licenses for Sustainability Manager sandbox Environments for Microsoft Partners	Pre-sales licenses for Sustainability Manager sandbox Environments for Microsoft Partners		
Sustainability Readiness Resources	Training Resources	Fabric Technical Resources	Fabric Technical Resources		
Sustainability Readiness Resources	Training Resources	Microsoft Cloud for Sustainability Technical Summit	Microsoft Cloud for Sustainability Technical Summit		
Sustainability Readiness Resources	Roadmap and Best Practices	Well-Architected for Microsoft Cloud for Sustainability	Well-Architected for Microsoft Cloud for Sustainability		
Sustainability Readiness Resources	Roadmap and Best Practices	What's new in Microsoft Cloud for Sustainability overview	What's new in Microsoft Cloud for Sustainability overview		

Marketplace Offer Development Resources	Marketplace Training and Support Resources	Sell Through the Commercial Marketplace	Sell Through the Commercial Marketplace		
Marketplace Offer Development Resources	Marketplace Training and Support Resources	Microsoft Commercial Marketplace Publisher FAQ	Microsoft Commercial Marketplace Publisher FAQ		
Marketplace Offer Development Resources	Marketplace Training and Support Resources	Mastering the Marketplace: Office Hours	Mastering the Marketplace: Office Hours		
Sustainability Cosell Acceleration Resources	Go-To-Market Assets & Recommended Sellers Training	Sustainability Marketing Campaigns	Sustainability Marketing Campaigns		
Sustainability Cosell Acceleration Resources	Go-To-Market Assets & Recommended Sellers Training	Recommended Sellers Training: Get started with Microsoft Cloud for Sustainability	Recommended Sellers Training: Get started with Microsoft Cloud for Sustainability		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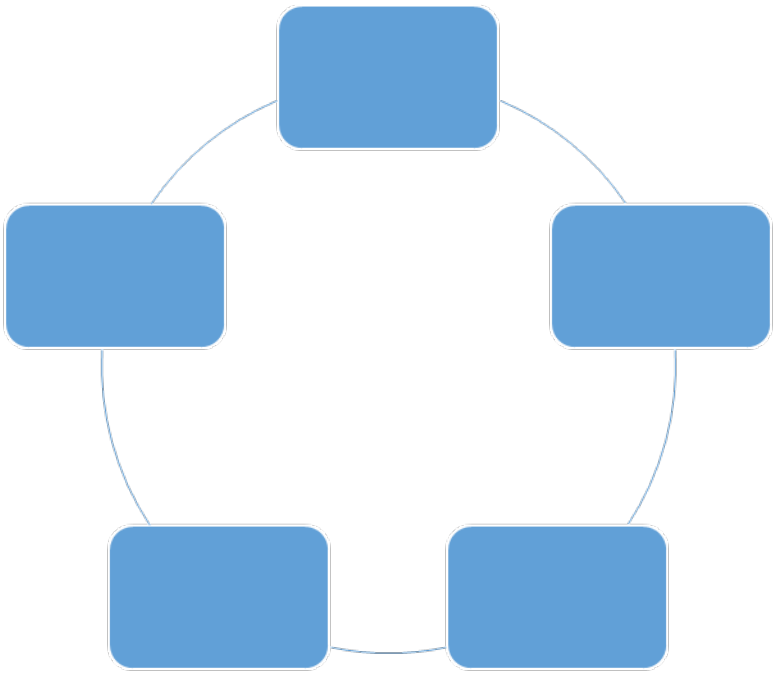

Radar chart ,,

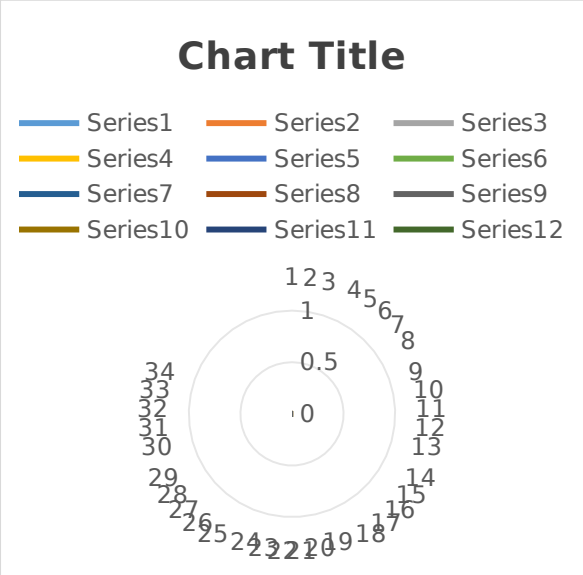
Chart Title
Series1
Series2
Series3
Series4
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Series7
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Series10
Series11
Series12

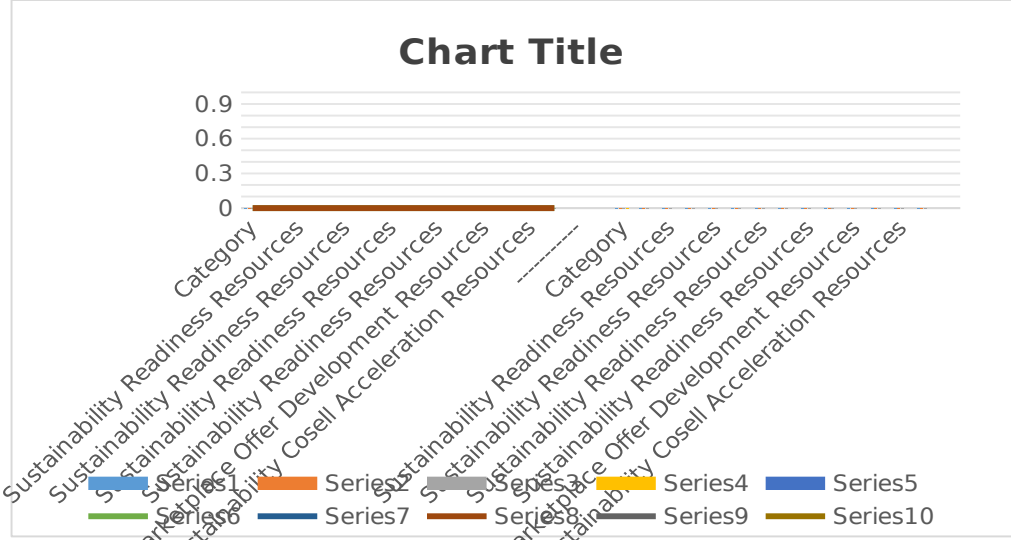
Chart Title
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Category
Sustainability Readiness Resources
Marketplace Offer Development Resources
Sustainability Cosell Acceleration Resources
Series1
Series2
Series3
Series4
Series5
Series6
Series7
Series8
Series9
Series10

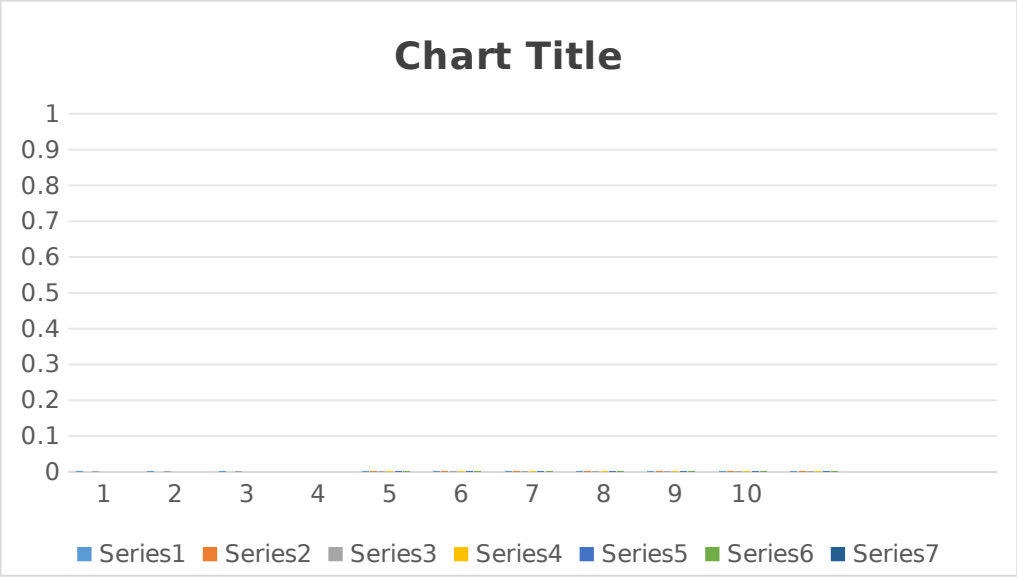
Chart Title
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Series1
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Series7

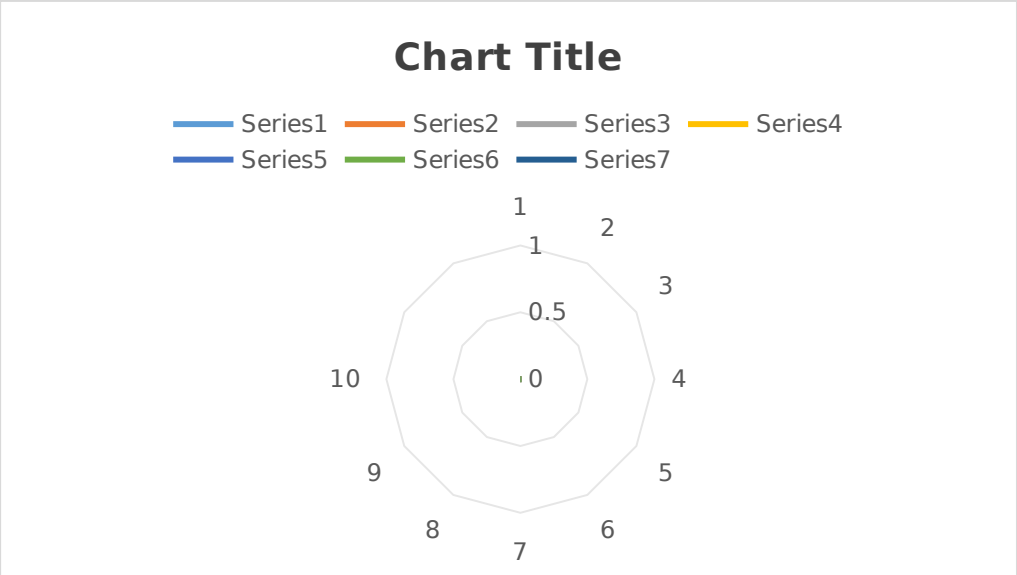
Chart Title
Series1
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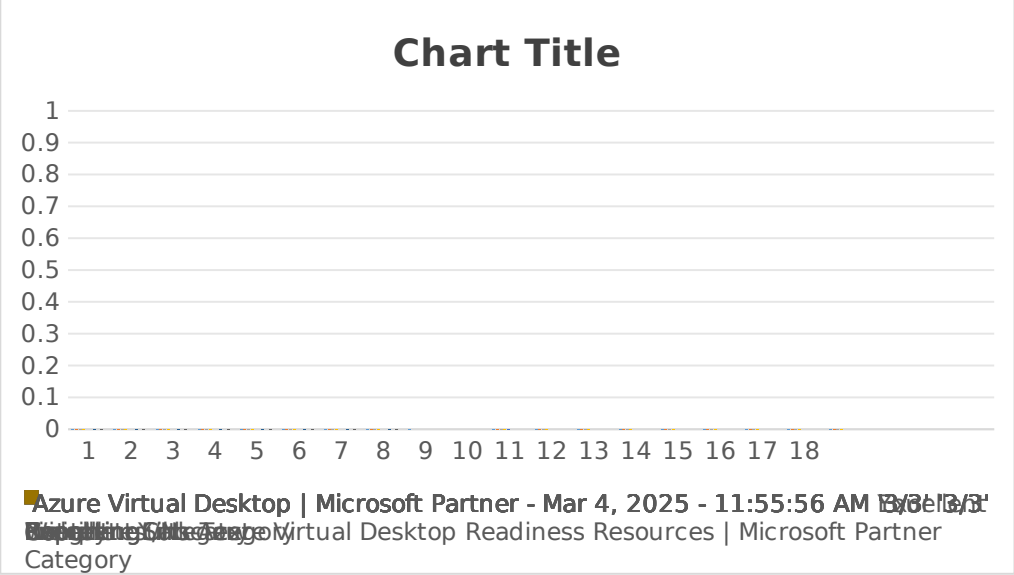
Chart Title
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Azure Virtual Desktop | Microsoft Partner - Mar 4, 2025 - 11:55:56 AM
Azure Virtual Desktop Readiness Resources | Microsoft Partner
Category

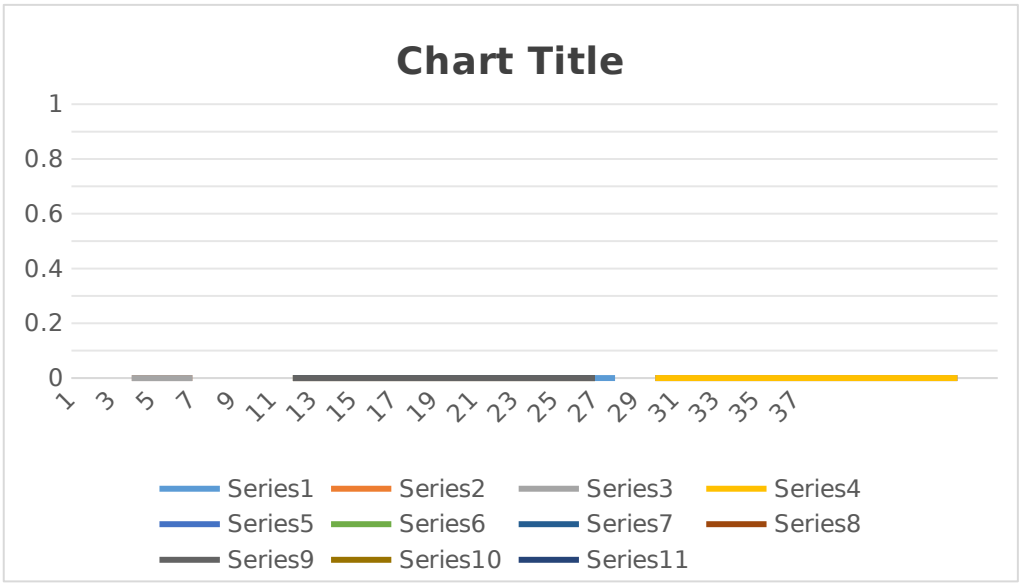
Chart Title
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1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37
Series1
Series2
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Series4
Series5
Series6
Series7
Series8
Series9
Series10
Series11

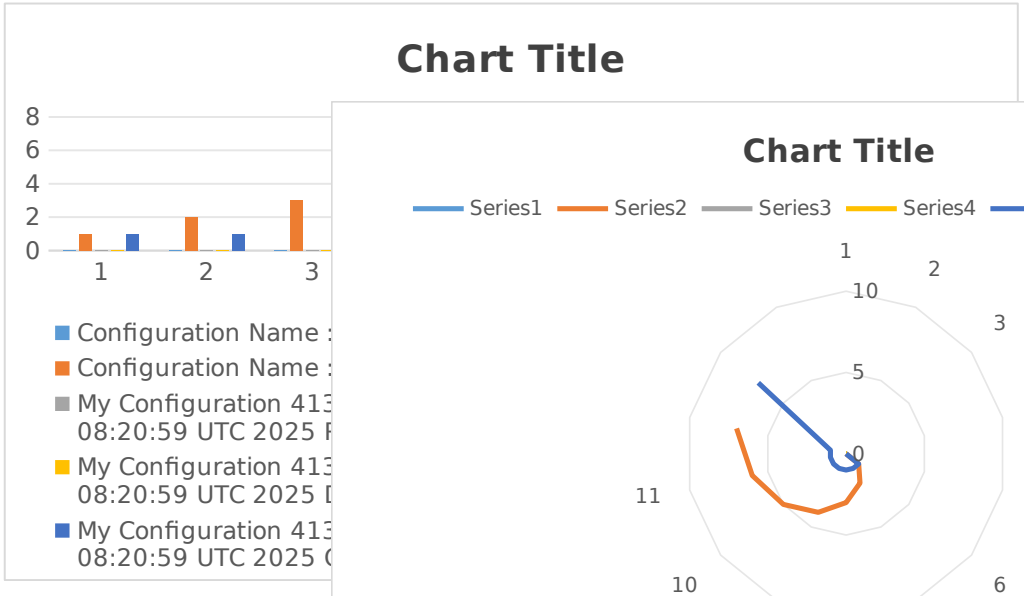
Chart Title
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Configuration Name :
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My Configuration 413
08:20:59 UTC 2025 D
My Configuration 413
08:20:59 UTC 2025 (

Chart Title
Series1
Series2
Series3
Series4
Series5
Series6
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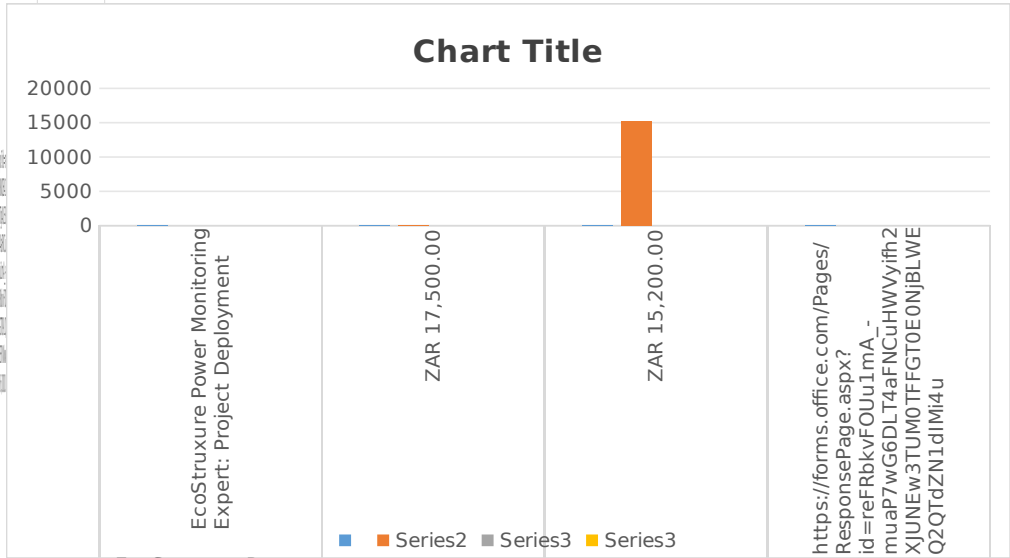
Chart Title
20000
15000
10000
5000
0
EcoStruxure Power Monitoring Expert: Project Deployment
ZAR 17,500.00
ZAR 15,200.00
https://forms.office.com/Pages/ResponsePage.aspx?id=reFRbkvFOUu1mA_-muaP7wG6DLT4aFNCuHWVyifh2XJUNEw3TUM0TFFGT0E0NjBLWEQ2QTdZN1dIMi4u
Series2
Series3
Series3

succeeded Jan 18, 2025 in 18s

6s

Current runner version: '2.321.0'

Operating System

Runner Image

Runner Image Provisioner

GITHUB_TOKEN Permissions

Secret source: Actions

Prepare workflow directory

Prepare all required actions

Getting action download info

Download action repository 'actions/checkout@v2' (SHA:ee0669bd1cc54295c223e0bb666b733df41de1c5)

Download action repository 'shundor/python-bandit-scan@9cc5aa4a006482b8a7f91134412df6772dbda22c' (SHA:9cc5aa4a006482b8a7f91134412df6772dbda22c)

Getting action download info

Download action repository 'actions/upload-artifact@main' (SHA:65c4c4a1ddee5b72f698fdd19549f0f0fb45cf08)

Download action repository 'github/codeql-action@v2' (SHA:b8d3b6e8af63cde30bdc382c0bc28114f4346c88)

Complete job name: bandit

1s

Run actions/checkout@v2

Syncing repository: Kananga5/engineering-workbase-tshing-pratical-batch-

Getting Git version info

Temporarily overriding HOME='/home/runner/work/_temp/d097deb1-71b1-46f0-aaeb-f21540e582e1' before making global git config changes

Adding repository directory to the temporary git global config as a safe directory

/usr/bin/git config --global --add safe.directory /home/runner/work/engineering-workbase-tshing-

to me,
tshigombekb

Current runner version: '2.322.0'
Operating System
Runner Image
Runner Image Provisioner
GITHUB_TOKEN Permissions
Secret source: Actions
Prepare workflow directory
Prepare all required actions
Getting action download info
Download action repository 'actions/checkout@v4' (SHA:11bd71901bbe5b1630ceea73d27597364c9af683)
Complete job name: build
14s
Run actions/checkout@v4
Syncing repository: Kananga5/experimental-career-work-master-thesis-atlantic-
Getting Git version info
Temporarily overriding HOME='/home/runner/work/_temp/fdd2df08-9e8d-4ede-b2e5-a892571defff' before making global git config changes
Adding repository directory to the temporary git global config as a safe directory
/usr/bin/git config --global --add safe.directory /home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-
Deleting the contents of '/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-'
Initializing the repository
Disabling automatic garbage collection
Setting up auth
Fetching the repository
Determining the checkout info
/usr/bin/git sparse-checkout disable
/usr/bin/git config --local --unset-all extensions.worktreeConfig

Checking out the ref
/usr/bin/git log -1 --format=%H
b341f5d76b3e7dcd2bb10edc91a6af2874152e10
0s
Run echo Hello, world!
Hello, world!
0s
Run echo Add other actions to build,
Add other actions to build,
test, and deploy your project.
0s
Post job cleanup.
/usr/bin/git version
git version 2.48.1
Temporarily overriding HOME='/home/runner/work/_temp/f3fc4178-4e0d-420c-9144-a0e1ca56200a' before making global git config changes
Adding repository directory to the temporary git global config as a safe directory
/usr/bin/git config --global --add safe.directory /home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-
/usr/bin/git config --local --name-only --get-regexp core\.sshCommand
/usr/bin/git submodule foreach --recursive sh -c "git config --local --name-only --get-regexp 'core\.sshCommand' && git config --local --unset-all 'core.sshCommand' || :"
/usr/bin/git config --local --name-only --get-regexp http\.https\:\/\/github\.com\/\.extraheader
http.https://github.com/.extraheader
/usr/bin/git config --local --unset-all http.https://github.com/.extraheader
/usr/bin/git submodule foreach --recursive sh -c "git config --local --name-only --get-regexp 'http\.https\:\/\/github\.com\/\.extraheader' && git config --local --unset-all 'http.https://github.com/.extraheader' || :"
0s
Cleaning up orphan processes

engineering security management system #4

-

Codacy Security Scan
succeeded Feb 27, 2025 in 48s

7s
Current runner version: '2.322.0'
Operating System
Runner Image
Runner Image Provisioner
GITHUB_TOKEN Permissions
Secret source: Actions
Prepare workflow directory
Prepare all required actions
Getting action download info
Download action repository 'actions/checkout@v4' (SHA:11bd71901bbe5b1630ceea73d27597364c9af683)
Download action repository 'codacy/codacy-analysis-cli-

action@d840f886c4bd4edc059706d09c6a1586111c540b'
(SHA:d840f886c4bd4edc059706d09c6a1586111c540b)
Download action repository 'github/codeql-action@v3'
(SHA:b56ba49b26e50535fa1e7f7db0f4f7b4bf65d80d)
Complete job name: Codacy Security Scan
9s
Run actions/checkout@v4
Syncing repository: Kananga5/experimental-career-work-master-thesis-atlantic-
Getting Git version info
Temporarily overriding HOME='/home/runner/work/_temp/6b755638-a1a8-4eb6-9f5c-3f900b44407b' before making global git config changes
Adding repository directory to the temporary git global config as a safe directory
/usr/bin/git config --global --add safe.directory /home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-
Deleting the contents of '/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-'
Initializing the repository
Disabling automatic garbage collection
Setting up auth
Fetching the repository
Determining the checkout info
/usr/bin/git sparse-checkout disable
/usr/bin/git config --local --unset-all extensions.worktreeConfig
Checking out the ref
/usr/bin/git log -1 --format=%H
b341f5d76b3e7dcd2bb10edc91a6af2874152e10
22s
Run codacy/codacy-analysis-cli-action@d840f886c4bd4edc059706d09c6a1586111c540b
Run echo "CODACY_ANALYSIS_CLI_VERSION=4.0.0" >> $GITHUB_ENV
Run echo "CLI_SCRIPT_PATH=/home/runner/work/_actions/codacy/codacy-analysis-cli-action/d840f886c4bd4edc059706d09c6a1586111c540b/codacy-analysis-cli.sh" >> $GITHUB_ENV
Run wget -O - https://raw.githubusercontent.com/codacy/codacy-analysis-cli/4.0.0/bin/codacy-analysis-cli.sh > /home/runner/work/_actions/codacy/codacy-analysis-cli-action/d840f886c4bd4edc059706d09c6a1586111c540b/codacy-analysis-cli.sh
--2025-02-27 12:18:34-- https://raw.githubusercontent.com/codacy/codacy-analysis-cli/4.0.0/bin/codacy-analysis-cli.sh
Resolving raw.githubusercontent.com (raw.githubusercontent.com)...
185.199.108.133, 185.199.110.133, 185.199.109.133, ...
Connecting to raw.githubusercontent.com (raw.githubusercontent.com)|185.199.108.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 3107 (3.0K) [text/plain]
Saving to: ‘STDOUT’
0K ... 100% 44.0M=0s
2025-02-27 12:18:34 (44.0 MB/s) - written to stdout [3107/3107]
Run chmod +x /home/runner/work/_actions/codacy/codacy-analysis-cli-action/d840f886c4bd4edc059706d09c6a1586111c540b/codacy-analysis-cli.sh
Run /home/runner/work/_actions/codacy/codacy-analysis-cli-action/d840f886c4bd4edc059706d09c6a1586111c540b/codacy-analysis-cli.sh analyze $(if [true = true]; then echo "--

verbose"; fi) $(if [ ]; then echo "--project-token "; fi) $(if [ ]; then echo "--codacy-api-base-url "; fi) $(if [sarif]; then echo "--format sarif"; fi) $(if [results.sarif]; then echo "--output results.sarif"; fi) $(if [ ]; then echo "--directory "; fi) $(if [ ]; then echo "--parallel "; fi) $(if [2147483647]; then echo "--max-allowed-issues 2147483647"; fi) $(if [ ]; then echo "--tool "; fi) $(if [ ]; then echo "--tool-timeout "; fi) $(if [= true]; then echo "--upload"; fi) $(if [= true]; then echo "--fail-if-incomplete"; fi) $(if [= true]; then echo "--allow-network"; fi) $(if [= true]; then echo "--force-file-permissions"; fi) $(if [true = true]; then echo "--gh-code-scanning-compat"; fi)
/home/runner/work/_temp/9f968dbd-ee66-48cc-aff8-4edbbb3128b3.sh: line 1: [: =: unary operator expected
/home/runner/work/_temp/9f968dbd-ee66-48cc-aff8-4edbbb3128b3.sh: line 1: [: =: unary operator expected
/home/runner/work/_temp/9f968dbd-ee66-48cc-aff8-4edbbb3128b3.sh: line 1: [: =: unary operator expected
/home/runner/work/_temp/9f968dbd-ee66-48cc-aff8-4edbbb3128b3.sh: line 1: [: =: unary operator expected
Unable to find image 'codacy/codacy-analysis-cli:4.0.0' locally
4.0.0: Pulling from codacy/codacy-analysis-cli
e7c96db7181b: Pulling fs layer
f910a506b6cb: Pulling fs layer
b6abafe80f63: Pulling fs layer
1811036e9141: Pulling fs layer
6314bc44cdf3: Pulling fs layer
8eac012f9da4: Pulling fs layer
6314bc44cdf3: Waiting
1811036e9141: Waiting
8eac012f9da4: Waiting
f910a506b6cb: Verifying Checksum
f910a506b6cb: Download complete
e7c96db7181b: Verifying Checksum
e7c96db7181b: Download complete
e7c96db7181b: Pull complete
6314bc44cdf3: Verifying Checksum
6314bc44cdf3: Download complete
b6abafe80f63: Verifying Checksum
b6abafe80f63: Download complete
f910a506b6cb: Pull complete
1811036e9141: Verifying Checksum
1811036e9141: Download complete
8eac012f9da4: Verifying Checksum
8eac012f9da4: Download complete
b6abafe80f63: Pull complete
1811036e9141: Pull complete
6314bc44cdf3: Pull complete
8eac012f9da4: Pull complete
Digest: sha256:4e563da124426918287e6ca75e80396264f4304b4a971c601099029bf89f9bcb
Status: Downloaded newer image for codacy/codacy-analysis-cli:4.0.0
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, create new FileSnapshot: lastRead=2025-02-27 12:18:41.984000000, lastModified=2025-02-27 12:18:34.000000000, size=454,

fileKey=(dev=801,ino=795414)
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:41.890000000, lastModified=2025-02-27 12:18:41.000000000, delta=890000000 ns, racy<=1251250000 ns
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:564 - file=/root/.config/jgit/config.lock, is racily clean
02/27 12:18:41 DEBUG o.e.jgit.util.SystemReader:432 - loading config FileBasedConfig[/root/.config/jgit/config]
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/root/.config/jgit/config, create new FileSnapshot: lastRead=2025-02-27 12:18:41.993000000, lastModified=2025-02-27 12:18:41.000000000, size=131, fileKey=(dev=2e,ino=4475043)
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:41.993000000, lastModified=2025-02-27 12:18:41.000000000, delta=993000000 ns, racy<=1251250000 ns
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, create new FileSnapshot: lastRead=2025-02-27 12:18:41.994000000, lastModified=2025-02-27 12:18:34.000000000, size=454, fileKey=(dev=801,ino=795414)
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:41.993000000, lastModified=2025-02-27 12:18:41.000000000, delta=993000000 ns, racy<=1251250000 ns
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:564 - file=/root/.config/jgit/config.lock, is racily clean
02/27 12:18:41 DEBUG o.e.jgit.util.SystemReader:432 - loading config FileBasedConfig[/root/.config/jgit/config]
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/root/.config/jgit/config, create new FileSnapshot: lastRead=2025-02-27 12:18:41.995000000, lastModified=2025-02-27 12:18:41.000000000, size=131, fileKey=(dev=2e,ino=4475043)
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:41.995000000, lastModified=2025-02-27 12:18:41.000000000, delta=995000000 ns, racy<=1251250000 ns
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-27 12:18:41.994000000, lastModified=2025-02-27 12:18:34.000000000, delta=7994000000 ns, racy<=2500000000 ns
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/index, create new FileSnapshot: lastRead=2025-02-27 12:18:41.997000000, lastModified=2025-02-27 12:18:34.000000000, size=3364,

fileKey=(dev=801,ino=795413)
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, create new FileSnapshot: lastRead=2025-02-27 12:18:41.998000000, lastModified=2025-02-27 12:18:34.000000000, size=454, fileKey=(dev=801,ino=795414)
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:41.995000000, lastModified=2025-02-27 12:18:41.000000000, delta=995000000 ns, racy<=1251250000 ns
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:564 - file=/root/.config/jgit/config.lock, is racily clean
02/27 12:18:41 DEBUG o.e.jgit.util.SystemReader:432 - loading config FileBasedConfig[/root/.config/jgit/config]
02/27 12:18:41 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/root/.config/jgit/config, create new FileSnapshot: lastRead=2025-02-27 12:18:41.999000000, lastModified=2025-02-27 12:18:41.000000000, size=131, fileKey=(dev=2e,ino=4475043)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:41.999000000, lastModified=2025-02-27 12:18:41.000000000, delta=999000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, create new FileSnapshot: lastRead=2025-02-27 12:18:42.000000000, lastModified=2025-02-27 12:18:34.000000000, size=454, fileKey=(dev=801,ino=795414)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:41.999000000, lastModified=2025-02-27 12:18:41.000000000, delta=999000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:564 - file=/root/.config/jgit/config.lock, is racily clean
02/27 12:18:42 DEBUG o.e.jgit.util.SystemReader:432 - loading config FileBasedConfig[/root/.config/jgit/config]
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/root/.config/jgit/config, create new FileSnapshot: lastRead=2025-02-27 12:18:42.002000000, lastModified=2025-02-27 12:18:41.000000000, size=131, fileKey=(dev=2e,ino=4475043)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:42.002000000, lastModified=2025-02-27 12:18:41.000000000, delta=1002000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-27 12:18:42.000000000, lastModified=2025-02-27 12:18:34.000000000, delta=8000000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-

career-work-master-thesis-atlantic-/.git/config, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/index, create new FileSnapshot: lastRead=2025-02-27 12:18:42.003000000, lastModified=2025-02-27 12:18:34.000000000, size=3364, fileKey=(dev=801,ino=795413)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:42.002000000, lastModified=2025-02-27 12:18:41.000000000, delta=1002000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:564 - file=/root/.config/jgit/config.lock, is racily clean
02/27 12:18:42 DEBUG o.e.jgit.util.SystemReader:432 - loading config FileBasedConfig[/root/.config/jgit/config]
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/root/.config/jgit/config, create new FileSnapshot: lastRead=2025-02-27 12:18:42.012000000, lastModified=2025-02-27 12:18:41.000000000, size=131, fileKey=(dev=2e,ino=4475043)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:42.012000000, lastModified=2025-02-27 12:18:41.000000000, delta=1012000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-27 12:18:42.000000000, lastModified=2025-02-27 12:18:34.000000000, delta=8000000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:42.012000000, lastModified=2025-02-27 12:18:41.000000000, delta=1012000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:564 - file=/root/.config/jgit/config.lock, is racily clean
02/27 12:18:42 DEBUG o.e.jgit.util.SystemReader:432 - loading config FileBasedConfig[/root/.config/jgit/config]
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/root/.config/jgit/config, create new FileSnapshot: lastRead=2025-02-27 12:18:42.017000000, lastModified=2025-02-27 12:18:41.000000000, size=131, fileKey=(dev=2e,ino=4475043)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:42.017000000, lastModified=2025-02-27 12:18:41.000000000, delta=1017000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-27 12:18:42.000000000, lastModified=2025-02-27 12:18:34.000000000, delta=8000000000

ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:42.017000000, lastModified=2025-02-27 12:18:41.000000000, delta=1017000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:564 - file=/root/.config/jgit/config.lock, is racily clean
02/27 12:18:42 DEBUG o.e.jgit.util.SystemReader:432 - loading config FileBasedConfig[/root/.config/jgit/config]
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/root/.config/jgit/config, create new FileSnapshot: lastRead=2025-02-27 12:18:42.027000000, lastModified=2025-02-27 12:18:41.000000000, size=131, fileKey=(dev=2e,ino=4475043)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:42.027000000, lastModified=2025-02-27 12:18:41.000000000, delta=1027000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-27 12:18:42.000000000, lastModified=2025-02-27 12:18:34.000000000, delta=8000000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/HEAD, create new FileSnapshot: lastRead=2025-02-27 12:18:42.029000000, lastModified=2025-02-27 12:18:34.000000000, size=21, fileKey=(dev=801,ino=795450)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/refs/heads/main, create new FileSnapshot: lastRead=2025-02-27 12:18:42.030000000, lastModified=2025-02-27 12:18:34.000000000, size=41, fileKey=(dev=801,ino=795447)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:42.027000000, lastModified=2025-02-27 12:18:41.000000000, delta=1027000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:564 - file=/root/.config/jgit/config.lock, is racily clean
02/27 12:18:42 DEBUG o.e.jgit.util.SystemReader:432 - loading config FileBasedConfig[/root/.config/jgit/config]
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/root/.config/jgit/config, create new FileSnapshot: lastRead=2025-02-27 12:18:42.031000000, lastModified=2025-02-27 12:18:41.000000000, size=131, fileKey=(dev=2e,ino=4475043)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:42.031000000, lastModified=2025-02-27 12:18:41.000000000, delta=1031000000 ns, racy<=1251250000 ns

02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-27 12:18:42.000000000, lastModified=2025-02-27 12:18:34.000000000, delta=8000000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/HEAD, isRacyClean=false, read=2025-02-27 12:18:42.029000000, lastModified=2025-02-27 12:18:34.000000000, delta=8029000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/HEAD, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/refs/heads/main, isRacyClean=false, read=2025-02-27 12:18:42.030000000, lastModified=2025-02-27 12:18:34.000000000, delta=8030000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/refs/heads/main, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:581 - file=null, size changed from -1 to 4096 bytes
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, create new FileSnapshot: lastRead=2025-02-27 12:18:42.034000000, lastModified=2025-02-27 12:18:26.000000000, size=4096, fileKey=(dev=801,ino=795223)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, isRacyClean=false, read=2025-02-27 12:18:42.034000000, lastModified=2025-02-27 12:18:26.000000000, delta=16034000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:581 - file=null, size changed from -1 to 41 bytes
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/shallow, create new FileSnapshot: lastRead=2025-02-27 12:18:42.036000000, lastModified=2025-02-27 12:18:27.000000000, size=41, fileKey=(dev=801,ino=795156)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-

career-work-master-thesis-atlantic-/.git/objects/pack, isRacyClean=false, read=2025-02-27 12:18:42.034000000, lastModified=2025-02-27 12:18:26.000000000, delta=16034000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/index, create new FileSnapshot: lastRead=2025-02-27 12:18:42.039000000, lastModified=2025-02-27 12:18:34.000000000, size=3364, fileKey=(dev=801,ino=795413)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/index, create new FileSnapshot: lastRead=2025-02-27 12:18:42.042000000, lastModified=2025-02-27 12:18:34.000000000, size=3364, fileKey=(dev=801,ino=795413)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:42.031000000, lastModified=2025-02-27 12:18:41.000000000, delta=1031000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:564 - file=/root/.config/jgit/config.lock, is racily clean
02/27 12:18:42 DEBUG o.e.jgit.util.SystemReader:432 - loading config FileBasedConfig[/root/.config/jgit/config]
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/root/.config/jgit/config, create new FileSnapshot: lastRead=2025-02-27 12:18:42.044000000, lastModified=2025-02-27 12:18:41.000000000, size=131, fileKey=(dev=2e,ino=4475043)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:42.044000000, lastModified=2025-02-27 12:18:41.000000000, delta=1044000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-27 12:18:42.000000000, lastModified=2025-02-27 12:18:34.000000000, delta=8000000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, isRacyClean=false, read=2025-02-27 12:18:42.034000000, lastModified=2025-02-27 12:18:26.000000000, delta=16034000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:42.044000000, lastModified=2025-02-27 12:18:41.000000000, delta=1044000000 ns, racy<=1251250000 ns

02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:564 - file=/root/.config/jgit/config.lock, is racily clean
02/27 12:18:42 DEBUG o.e.jgit.util.SystemReader:432 - loading config FileBasedConfig[/root/.config/jgit/config]
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/root/.config/jgit/config, create new FileSnapshot: lastRead=2025-02-27 12:18:42.054000000, lastModified=2025-02-27 12:18:41.000000000, size=131, fileKey=(dev=2e,ino=4475043)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:42.054000000, lastModified=2025-02-27 12:18:41.000000000, delta=1054000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-27 12:18:42.000000000, lastModified=2025-02-27 12:18:34.000000000, delta=8000000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, isRacyClean=false, read=2025-02-27 12:18:42.034000000, lastModified=2025-02-27 12:18:26.000000000, delta=16034000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, isRacyClean=false, read=2025-02-27 12:18:42.034000000, lastModified=2025-02-27 12:18:26.000000000, delta=16034000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:42.054000000, lastModified=2025-02-27 12:18:41.000000000, delta=1054000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:564 - file=/root/.config/jgit/config.lock, is racily clean
02/27 12:18:42 DEBUG o.e.jgit.util.SystemReader:432 - loading config FileBasedConfig[/root/.config/jgit/config]
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/root/.config/jgit/config, create new FileSnapshot: lastRead=2025-02-27 12:18:42.063000000, lastModified=2025-02-27 12:18:41.000000000, size=131, fileKey=(dev=2e,ino=4475043)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:42.063000000, lastModified=2025-02-27 12:18:41.000000000, delta=1063000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig,

isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-27 12:18:42.000000000, lastModified=2025-02-27 12:18:34.000000000, delta=8000000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=true, read=2025-02-27 12:18:42.063000000, lastModified=2025-02-27 12:18:41.000000000, delta=1063000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:564 - file=/root/.config/jgit/config.lock, is racily clean
02/27 12:18:42 DEBUG o.e.jgit.util.SystemReader:432 - loading config FileBasedConfig[/root/.config/jgit/config]
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/root/.config/jgit/config, create new FileSnapshot: lastRead=2025-02-27 12:18:42.710000000, lastModified=2025-02-27 12:18:41.000000000, size=131, fileKey=(dev=2e,ino=4475043)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.config/jgit/config.lock, isRacyClean=false, read=2025-02-27 12:18:42.710000000, lastModified=2025-02-27 12:18:41.000000000, delta=1710000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-27 12:18:42.000000000, lastModified=2025-02-27 12:18:34.000000000, delta=8000000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-27 12:18:42.000000000, lastModified=2025-02-27 12:18:34.000000000, delta=8000000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified
02/27 12:18:42 WARN c.c.a.c.command.AnalyseCommand:105 - There are uncommitted changes in the project.

Please commit them before running your analysis:
Uncommited files:
results.sarif
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-27 12:18:42.000000000, lastModified=2025-02-27 12:18:34.000000000, delta=8000000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/HEAD, isRacyClean=false, read=2025-02-27 12:18:42.029000000, lastModified=2025-02-27 12:18:34.000000000, delta=8029000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/HEAD, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/refs/heads/main, isRacyClean=false, read=2025-02-27 12:18:42.030000000, lastModified=2025-02-27 12:18:34.000000000, delta=8030000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/refs/heads/main, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-27 12:18:42.000000000, lastModified=2025-02-27 12:18:34.000000000, delta=8000000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/HEAD, isRacyClean=false, read=2025-02-27 12:18:42.029000000, lastModified=2025-02-27 12:18:34.000000000, delta=8029000000 ns, racy<=1251250000 ns

02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/HEAD, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/refs/heads/main, isRacyClean=false, read=2025-02-27 12:18:42.030000000, lastModified=2025-02-27 12:18:34.000000000, delta=8030000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/refs/heads/main, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/shallow, isRacyClean=false, read=2025-02-27 12:18:42.036000000, lastModified=2025-02-27 12:18:27.000000000, delta=15036000000 ns, racy<=1251250000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/shallow, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, create new FileSnapshot: lastRead=2025-02-27 12:18:42.730000000, lastModified=2025-02-27 12:18:34.000000000, size=454, fileKey=(dev=801,ino=795414)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, create new FileSnapshot: lastRead=2025-02-27 12:18:42.731000000, lastModified=2025-02-27 12:18:34.000000000, size=454, fileKey=(dev=801,ino=795414)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-27 12:18:42.731000000, lastModified=2025-02-27 12:18:34.000000000, delta=8731000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/index, create new FileSnapshot: lastRead=2025-02-

27 12:18:42.733000000, lastModified=2025-02-27 12:18:34.000000000, size=3364, fileKey=(dev=801,ino=795413)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, create new FileSnapshot: lastRead=2025-02-27 12:18:42.733000000, lastModified=2025-02-27 12:18:34.000000000, size=454, fileKey=(dev=801,ino=795414)
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
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02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-27 12:18:41.357000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740658721357000000 ns, racy<=2500000000 ns
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02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-27 12:18:42.734000000, lastModified=2025-02-27 12:18:34.000000000, delta=8734000000 ns, racy<=2500000000 ns
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified
02/27 12:18:42 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/index, create new FileSnapshot: lastRead=2025-02-27 12:18:42.736000000, lastModified=2025-02-27 12:18:34.00000000
...

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-
-
- Settings

Codacy Security Scan

Create mdbook.ymleng **#3**

-

Codacy Security Scan

succeeded Feb 25, 2025 in 47s

8s

Current runner version: '2.322.0'

Operating System

Runner Image

Runner Image Provisioner

GITHUB_TOKEN Permissions

Secret source: Actions

Prepare workflow directory

Prepare all required actions

Getting action download info

Download action repository 'actions/checkout@v4' (SHA:11bd71901bbe5b1630ceea73d27597364c9af683)

Download action repository 'codacy/codacy-analysis-cli-action@d840f886c4bd4edc059706d09c6a1586111c540b' (SHA:d840f886c4bd4edc059706d09c6a1586111c540b)

Download action repository 'github/codeql-action@v3' (SHA:b56ba49b26e50535fa1e7f7db0f4f7b4bf65d80d)

Complete job name: Codacy Security Scan

7s

Run actions/checkout@v4

Syncing repository: Kananga5/experimental-career-work-master-thesis-atlantic-

Getting Git version info

Temporarily overriding HOME='/home/runner/work/_temp/5b297f60-bc05-491c-946b-09bd3e93526d' before making global git config changes

Adding repository directory to the temporary git global config as a safe directory

/usr/bin/git config --global --add safe.directory /home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-

Deleting the contents of '/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-'

Initializing the repository

Disabling automatic garbage collection

Setting up auth

Fetching the repository

Determining the checkout info

/usr/bin/git sparse-checkout disable

/usr/bin/git config --local --unset-all extensions.worktreeConfig

Checking out the ref

/usr/bin/git log -1 --format=%H

9d4c86672d506a31a6a939fc82f6e638795bdd8e

21s

Run codacy/codacy-analysis-cli-action@d840f886c4bd4edc059706d09c6a1586111c540b

Run echo "CODACY_ANALYSIS_CLI_VERSION=4.0.0" >> $GITHUB_ENV

Run echo "CLI_SCRIPT_PATH=/home/runner/work/_actions/codacy/codacy-analysis-cli-action/d840f886c4bd4edc059706d09c6a1586111c540b/codacy-analysis-cli.sh" >> $GITHUB_ENV

Run wget -O - https://raw.githubusercontent.com/codacy/codacy-analysis-cli/4.0.0/bin/codacy-analysis-cli.sh > /home/runner/work/_actions/codacy/codacy-analysis-cli-action/d840f886c4bd4edc059706d09c6a1586111c540b/codacy-analysis-cli.sh

--2025-02-25 12:52:53-- https://raw.githubusercontent.com/codacy/codacy-analysis-cli/4.0.0/bin/codacy-analysis-cli.sh

Resolving raw.githubusercontent.com **(**raw.githubusercontent.com**)... 185.199.111.133, 185.199.108.133, 185.199.109.133, ...**

Connecting to raw.githubusercontent.com **(**raw.githubusercontent.com**)| 185.199.111.133|:443... connected.**

HTTP request sent, awaiting response... 200 OK

Length: 3107 (3.0K) [text/plain]

Saving to: ‘STDOUT’

0K ... 100% 33.7M=0s

2025-02-25 12:52:53 (33.7 MB/s) - written to stdout [3107/3107]

Run chmod +x /home/runner/work/_actions/codacy/codacy-analysis-cli-action/d840f886c4bd4ed

c059706d09c6a1586111c540b/codacy-analysis-cli.sh

Run /home/runner/work/_actions/codacy/codacy-analysis-cli-action/d840f886c4bd4edc059706d09c6a1586111c540b/codacy-analysis-cli.sh analyze $(if [true = true]; then echo "--verbose"; fi) $(if [ ]; then echo "--project-token "; fi) $(if [ ]; then echo "--codacy-api-base-url "; fi) $(if [sarif]; then echo "--format sarif"; fi) $(if [results.sarif]; then echo "--output results.sarif"; fi) $(if [ ]; then echo "--directory "; fi) $(if [ ]; then echo "--parallel "; fi) $(if [2147483647]; then echo "--max-allowed-issues 2147483647"; fi) $(if [ ]; then echo "--tool "; fi) $(if [ ]; then echo "--tool-timeout "; fi) $(if [= true]; then echo "--upload"; fi) $(if [= true]; then echo "--fail-if-incomplete"; fi) $(if [= true]; then echo "--allow-network"; fi) $(if [= true]; then echo "--force-file-permissions"; fi) $(if [true = true]; then echo "--gh-code-scanning-compat"; fi)

/home/runner/work/_temp/81e88f3b-575b-4ad9-92c1-87b4fa134142.sh: line 1: [: =: unary operator expected

/home/runner/work/_temp/81e88f3b-575b-4ad9-92c1-87b4fa134142.sh: line 1: [: =: unary operator expected

/home/runner/work/_temp/81e88f3b-575b-4ad9-92c1-87b4fa134142.sh: line 1: [: =: unary operator expected

/home/runner/work/_temp/81e88f3b-575b-4ad9-92c1-87b4fa134142.sh: line 1: [: =: unary operator expected

Unable to find image 'codacy/codacy-analysis-cli:4.0.0' locally

4.0.0: Pulling from codacy/codacy-analysis-cli

e7c96db7181b: Pulling fs layer

f910a506b6cb: Pulling fs layer

b6abafe80f63: Pulling fs layer

1811036e9141: Pulling fs layer

1811036e9141: Waiting

6314bc44cdf3: Pulling fs layer

8eac012f9da4: Pulling fs layer

6314bc44cdf3: Waiting

8eac012f9da4: Waiting

f910a506b6cb: Verifying Checksum

f910a506b6cb: Download complete

e7c96db7181b: Download complete

e7c96db7181b: Pull complete

6314bc44cdf3: Download complete

b6abafe80f63: Verifying Checksum

b6abafe80f63: Download complete

f910a506b6cb: Pull complete

1811036e9141: Verifying Checksum

1811036e9141: Download complete

8eac012f9da4: Verifying Checksum

8eac012f9da4: Download complete

b6abafe80f63: Pull complete

1811036e9141: Pull complete

6314bc44cdf3: Pull complete

8eac012f9da4: Pull complete

Digest: sha256:4e563da124426918287e6ca75e80396264f4304b4a971c601099029bf89f9bcb

Status: Downloaded newer image for codacy/codacy-analysis-cli:4.0.0

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, create new FileSnapshot: lastRead=2025-02-25 12:53:00.393000000, lastModified=2025-02-25 12:52:52.000000000, size=454, fileKey=(dev=801,ino=2099793)

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, create new FileSnapshot: lastRead=2025-02-25 12:53:00.401000000, lastModified=2025-02-25 12:52:52.000000000, size=454, fileKey=(dev=801,ino=2099793)

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false,

read=2025-02-25 12:53:00.401000000, lastModified=2025-02-25 12:52:52.000000000, delta=8401000000 ns, racy<=2500000000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/index, create new FileSnapshot: lastRead=2025-02-25 12:53:00.404000000, lastModified=2025-02-25 12:52:52.000000000, size=2660, fileKey=(dev=801,ino=2099792)

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, create new FileSnapshot: lastRead=2025-02-25 12:53:00.404000000, lastModified=2025-02-25 12:52:52.000000000, size=454, fileKey=(dev=801,ino=2099793)

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, create new FileSnapshot: lastRead=2025-02-25 12:53:00.406000000, lastModified=2025-02-25 12:52:52.000000000, size=454, fileKey=(dev=801,ino=2099793)

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-25 12:53:00.406000000, lastModified=2025-02-25 12:52:52.000000000, delta=8406000000 ns, racy<=2500000000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/

experimental-career-work-master-thesis-atlantic-/.git/index, create new FileSnapshot: lastRead=2025-02-25 12:53:00.409000000, lastModified=2025-02-25 12:52:52.000000000, size=2660, fileKey=(dev=801,ino=2099792)

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

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02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/HEAD, create new FileSnapshot: lastRead=2025-02-25 12:53:00.431000000, lastModified=2025-02-25 12:52:52.000000000, size=21, fileKey=(dev=801,ino=2099805)

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/refs/heads/main, create new FileSnapshot: lastRead=2025-02-25 12:53:00.431000000, lastModified=2025-02-25 12:52:52.000000000, size=41, fileKey=(dev=801,ino=2099802)

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-25 12:53:00.406000000, lastModified=2025-02-25 12:52:52.000000000, delta=8406000000 ns, racy<=2500000000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/HEAD, isRacyClean=false, read=2025-02-25 12:53:00.431000000, lastModified=2025-02-25 12:52:52.000000000, delta=8431000000 ns, racy<=1251250000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/HEAD, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/refs/heads/main, isRacyClean=false, read=2025-02-25 12:53:00.431000000, lastModified=2025-02-25 12:52:52.000000000, delta=8431000000 ns, racy<=1251250000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 -

file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/refs/heads/main, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:581 - file=null, size changed from -1 to 4096 bytes

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, create new FileSnapshot: lastRead=2025-02-25 12:53:00.435000000, lastModified=2025-02-25 12:52:45.000000000, size=4096, fileKey=(dev=801,ino=2099727)

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, isRacyClean=false, read=2025-02-25 12:53:00.435000000, lastModified=2025-02-25 12:52:45.000000000, delta=15435000000 ns, racy<=1251250000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:581 - file=null, size changed from -1 to 41 bytes

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/shallow, create new FileSnapshot: lastRead=2025-02-25 12:53:00.437000000, lastModified=2025-02-25 12:52:46.000000000, size=41, fileKey=(dev=801,ino=2099730)

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, isRacyClean=false, read=2025-02-25 12:53:00.435000000, lastModified=2025-02-25 12:52:45.000000000, delta=15435000000 ns, racy<=1251250000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/index, create new FileSnapshot: lastRead=2025-02-25 12:53:00.441000000, lastModified=2025-02-25 12:52:52.000000000, size=2660, fileKey=(dev=801,ino=2099792)

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/index, create new FileSnapshot: lastRead=2025-02-25 12:53:00.444000000, lastModified=2025-02-25 12:52:52.000000000, size=2660, fileKey=(dev=801,ino=2099792)

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-25 12:53:00.406000000, lastModified=2025-02-25 12:52:52.000000000, delta=8406000000 ns, racy<=2500000000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, isRacyClean=false, read=2025-02-25 12:53:00.435000000, lastModified=2025-02-25 12:52:45.000000000, delta=15435000000 ns, racy<=1251250000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-25 12:53:00.406000000, lastModified=2025-02-25 12:52:52.000000000, delta=8406000000 ns, racy<=2500000000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, isRacyClean=false, read=2025-02-25 12:53:00.435000000, lastModified=2025-02-25 12:52:45.000000000, delta=15435000000 ns, racy<=1251250000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, is

unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, isRacyClean=false, read=2025-02-25 12:53:00.435000000, lastModified=2025-02-25 12:52:45.000000000, delta=15435000000 ns, racy<=1251250000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-25 12:53:00.406000000, lastModified=2025-02-25 12:52:52.000000000, delta=8406000000 ns, racy<=2500000000 ns

02/25 12:53:00 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-25 12:53:00.406000000, lastModified=2025-02-25 12:52:52.000000000, delta=8406000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig,

isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-25 12:53:00.406000000, lastModified=2025-02-25 12:52:52.000000000, delta=8406000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified

02/25 12:53:01 WARN c.c.a.c.command.AnalyseCommand:105 - There are uncommitted changes in the project.

Please commit them before running your analysis:

Uncommited files:

results.sarif

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-25 12:53:00.406000000, lastModified=2025-02-25 12:52:52.000000000, delta=8406000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/HEAD, isRacyClean=false, read=2025-02-25 12:53:00.431000000, lastModified=2025-02-25 12:52:52.000000000, delta=8431000000 ns, racy<=1251250000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/HEAD, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/refs/heads/main,

isRacyClean=false, read=2025-02-25 12:53:00.431000000, lastModified=2025-02-25 12:52:52.000000000, delta=8431000000 ns, racy<=1251250000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/refs/heads/main, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-25 12:53:00.406000000, lastModified=2025-02-25 12:52:52.000000000, delta=8406000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/HEAD, isRacyClean=false, read=2025-02-25 12:53:00.431000000, lastModified=2025-02-25 12:52:52.000000000, delta=8431000000 ns, racy<=1251250000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/HEAD, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/refs/heads/main, isRacyClean=false, read=2025-02-25 12:53:00.431000000, lastModified=2025-02-25 12:52:52.000000000, delta=8431000000 ns, racy<=1251250000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/refs/heads/main, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/shallow, isRacyClean=false, read=2025-02-25 12:53:00.437000000, lastModified=2025-02-25 12:52:46.000000000, delta=14437000000 ns, racy<=1251250000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/

experimental-career-work-master-thesis-atlantic-/.git/shallow, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, create new FileSnapshot: lastRead=2025-02-25 12:53:01.080000000, lastModified=2025-02-25 12:52:52.000000000, size=454, fileKey=(dev=801,ino=2099793)

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, create new FileSnapshot: lastRead=2025-02-25 12:53:01.081000000, lastModified=2025-02-25 12:52:52.000000000, size=454, fileKey=(dev=801,ino=2099793)

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-25 12:53:01.081000000, lastModified=2025-02-25 12:52:52.000000000, delta=9081000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/index, create new FileSnapshot: lastRead=2025-02-25 12:53:01.083000000, lastModified=2025-02-25 12:52:52.000000000, size=2660, fileKey=(dev=801,ino=2099792)

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, create new FileSnapshot: lastRead=2025-02-25 12:53:01.083000000, lastModified=2025-02-25 12:52:52.000000000, size=454, fileKey=(dev=801,ino=2099793)

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:550 -

file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, create new FileSnapshot: lastRead=2025-02-25 12:53:01.084000000, lastModified=2025-02-25 12:52:52.000000000, size=454, fileKey=(dev=801,ino=2099793)

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-25 12:53:01.084000000, lastModified=2025-02-25 12:52:52.000000000, delta=9084000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/index, create new FileSnapshot: lastRead=2025-02-25 12:53:01.089000000, lastModified=2025-02-25 12:52:52.000000000, size=2660, fileKey=(dev=801,ino=2099792)

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-25 12:53:01.084000000, lastModified=2025-02-25

12:52:52.000000000, delta=9084000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/HEAD, create new FileSnapshot: lastRead=2025-02-25 12:53:01.092000000, lastModified=2025-02-25 12:52:52.000000000, size=21, fileKey=(dev=801,ino=2099805)

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/refs/heads/main, create new FileSnapshot: lastRead=2025-02-25 12:53:01.093000000, lastModified=2025-02-25 12:52:52.000000000, size=41, fileKey=(dev=801,ino=2099802)

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-25 12:53:01.084000000, lastModified=2025-02-25 12:52:52.000000000, delta=9084000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/HEAD, isRacyClean=false, read=2025-02-25 12:53:01.092000000, lastModified=2025-02-25 12:52:52.000000000, delta=9092000000 ns, racy<=1251250000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/HEAD, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/refs/heads/main, isRacyClean=false, read=2025-02-25 12:53:01.093000000, lastModified=2025-02-25 12:52:52.000000000, delta=9093000000 ns, racy<=1251250000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/refs/heads/main, is

unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:581 - file=null, size changed from -1 to 4096 bytes

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, create new FileSnapshot: lastRead=2025-02-25 12:53:01.096000000, lastModified=2025-02-25 12:52:45.000000000, size=4096, fileKey=(dev=801,ino=2099727)

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, isRacyClean=false, read=2025-02-25 12:53:01.096000000, lastModified=2025-02-25 12:52:45.000000000, delta=16096000000 ns, racy<=1251250000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:581 - file=null, size changed from -1 to 41 bytes

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:272 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/shallow, create new FileSnapshot: lastRead=2025-02-25 12:53:01.097000000, lastModified=2025-02-25 12:52:46.000000000, size=41, fileKey=(dev=801,ino=2099730)

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:550 - file=/root/.config/jgit/config.lock, cannot be racily clean

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/root/.gitconfig, isRacyClean=false, read=2025-02-25 12:52:59.759000000, lastModified=1970-01-01 00:00:00.000000000, delta=1740487979759000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/root/.gitconfig, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, isRacyClean=false, read=2025-02-25 12:53:01.084000000, lastModified=2025-02-25 12:52:52.000000000, delta=9084000000 ns, racy<=2500000000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/config, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/shallow, isRacyClean=false, read=2025-02-25 12:53:01.097000000, lastModified=2025-02-25 12:52:46.000000000, delta=15097000000 ns, racy<=1251250000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 -

file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/shallow, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, isRacyClean=false, read=2025-02-25 12:53:01.096000000, lastModified=2025-02-25 12:52:45.000000000, delta=16096000000 ns, racy<=1251250000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, isRacyClean=false, read=2025-02-25 12:53:01.096000000, lastModified=2025-02-25 12:52:45.000000000, delta=16096000000 ns, racy<=1251250000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, isRacyClean=false, read=2025-02-25 12:53:01.096000000, lastModified=2025-02-25 12:52:45.000000000, delta=16096000000 ns, racy<=1251250000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, is unmodified

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:513 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, isRacyClean=false, read=2025-02-25 12:53:01.096000000, lastModified=2025-02-25 12:52:45.000000000, delta=16096000000 ns, racy<=1251250000 ns

02/25 12:53:01 DEBUG o.e.j.i.s.file.FileSnapshot:557 - file=/home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-/.git/objects/pack, is unmodified

02/25 12:53:01 INFO c.c.a.c.utils.LanguagesHelper:16 - No language found for drawing note Engineering rural note hydraulic.pdf

02/25 12:53:01 INFO c.c.a.c.utils.LanguagesHelper:16 - No language found for .gitignore

02/25 12:53:01 INFO c.c.a.c.utils.LanguagesHelper:16 - No language found for SBIR-STTR Submitted Project Pitch-00095759.pdf

02/25 12:53:01 INFO c.c.a.c.utils.LanguagesHelper:16 - No language found for SBIR-STTR Submitted Project Pitch-00098889.pdf

02/25 12:53:01 INFO c.c.a.c.utils.LanguagesHelper:16 - No language found for drawing .course AIU ...pdf

02/25 12:53:01 INFO c.c.a.c.utils.LanguagesHelper:16 - No language found for ip requested integrity thesis portofolio request commercial research book met.pdf

02/25 12:53:01 INFO c.c.a.c.utils.LanguagesHelper:16 - No language found for LICENSE

02/25 12:53:01 INFO c.c.a.c.utils.LanguagesHelper:16 - No language found for SBIR-STTR Submitted Project Pitch.pdf

02/25 12:53:01 INFO c.c.a.c.utils.LanguagesHelper:16 - No language found for drawing curriculum AIU.pdf

02/25 12:53:01 INFO c.c.a.c.utils.LanguagesHelper:16 - No language found for tshingombe tshitadi atlantic career ,, design.docx

02/25 12:53:01 INFO c.c.a.c.utils.LanguagesHelper:16 - No language found for drawing note total assessment energy rural,.pdf

02/25 12:53:01 INFO c.c.a.c.utils.LanguagesHelper:16 - No language found for workplace experimental ip request research met thesis aiu,,eaton microsofr eskom city power.pdf

02/25 12:53:01 INFO c.c.a.c.utils.LanguagesHelper:16 - No language found for drawing note energy rurale component .structe.pdf

02/25 12:53:01 INFO c.c.a.c.utils.LanguagesHelper:16 - No language found for drawing note , master energy rural component ...pdf

02/25 12:53:01 INFO c.c.a.c.utils.LanguagesHelper:16 - No language found for drawing note energy rural . discovery project.pdf

02/25 12:53:01 INFO c.c.a.c.utils.LanguagesHelper:16 - No language found for tshingombe tshitadi atlantic career ,, design.pdf

02/25 12:53:01 INFO c.c.a.c.utils.LanguagesHelper:16 - No language found for drawing note free hand ..pdf

02/25 12:53:01 INFO c.c.a.c.t.DuplicationToolCollector:81 - No duplication tools found for language Markdown

02/25 12:53:01 INFO c.c.a.c.t.DuplicationToolCollector:81 - No duplication tools found for language YAML

02/25 12:53:01 DEBUG CodacyPlugins:17 - codacy/codacy-metrics-cloc:0.2.4 doesn't exist locally.

02/25 12:53:01 INFO CodacyPlugins:26 - Verifying if docker image codacy/codacy-metrics-cloc:0.2.4 exists locally. took 53ms

02/25 12:53:06 INFO CodacyPlugins:26 - Pulling docker image codacy/codacy-metrics-cloc:0.2.4. took 4668ms

02/25 12:53:07 INFO CodacyPlugins:26 - Running docker image codacy/codacy-metrics-cloc:0.2.4. took 1186ms

02/25 12:53:07 INFO c.c.a.c.a.CodacyPluginsAnalyser:48 - Completed metrics for metrics with 1 results

02/25 12:53:07 INFO CodacyPlugins:26 - Verifying if docker image codacy/codacy-metrics-cloc:0.2.4 exists locally. took 31ms

02/25 12:53:08 INFO CodacyPlugins:26 - Running docker image codacy/codacy-metrics-cloc:0.2.4. took 1234ms

02/25 12:53:08 INFO c.c.a.c.a.CodacyPluginsAnalyser:48 - Completed metrics for metrics with 6 results

02/25 12:53:08 INFO c.c.a.c.a.AnalyseExecutor:192 - Could not find local extra configuration for remark-lint

02/25 12:53:08 INFO c.c.a.c.a.AnalyseExecutor:181 - Preparing to run remark-lint with defaults

02/25 12:53:08 INFO c.c.analysis.core.tools.Tool:101 - Using the root directory /home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic- to run

02/25 12:53:08 DEBUG CodacyPlugins:17 - codacy/codacy-remark-lint:2.5.8 doesn't exist locally.

02/25 12:53:08 INFO CodacyPlugins:26 - Verifying if docker image codacy/codacy-remark-lint:2.5.8 exists locally. took 32ms

02/25 12:53:14 INFO CodacyPlugins:26 - Pulling docker image codacy/codacy-remark-lint:2.5.8. took 5270ms

02/25 12:53:14 INFO CodacyPlugins:26 - Running docker image codacy/codacy-remark-lint:2.5.8. took 448ms

02/25 12:53:14 INFO c.c.a.c.a.CodacyPluginsAnalyser:28 - Completed analysis for remark-lint with 23 results

7s

Run github/codeql-action/upload-sarif@v3

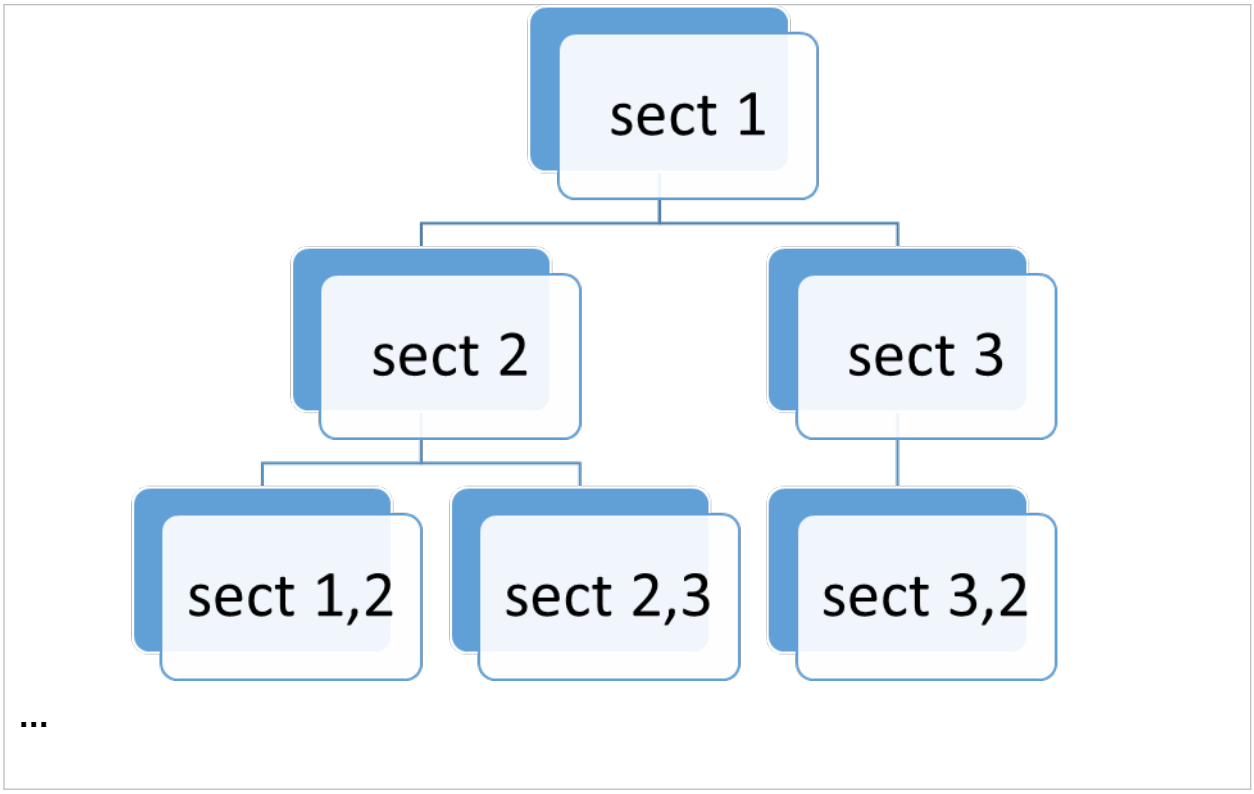
with:

sarif_file: results.sarif

checkout_path: /home/runner/work/experimental-career-work-master-thesis-atlantic-/experimental-career-work-master-thesis-atlantic-

token: *

<span class="gmail-CheckStep-line-co



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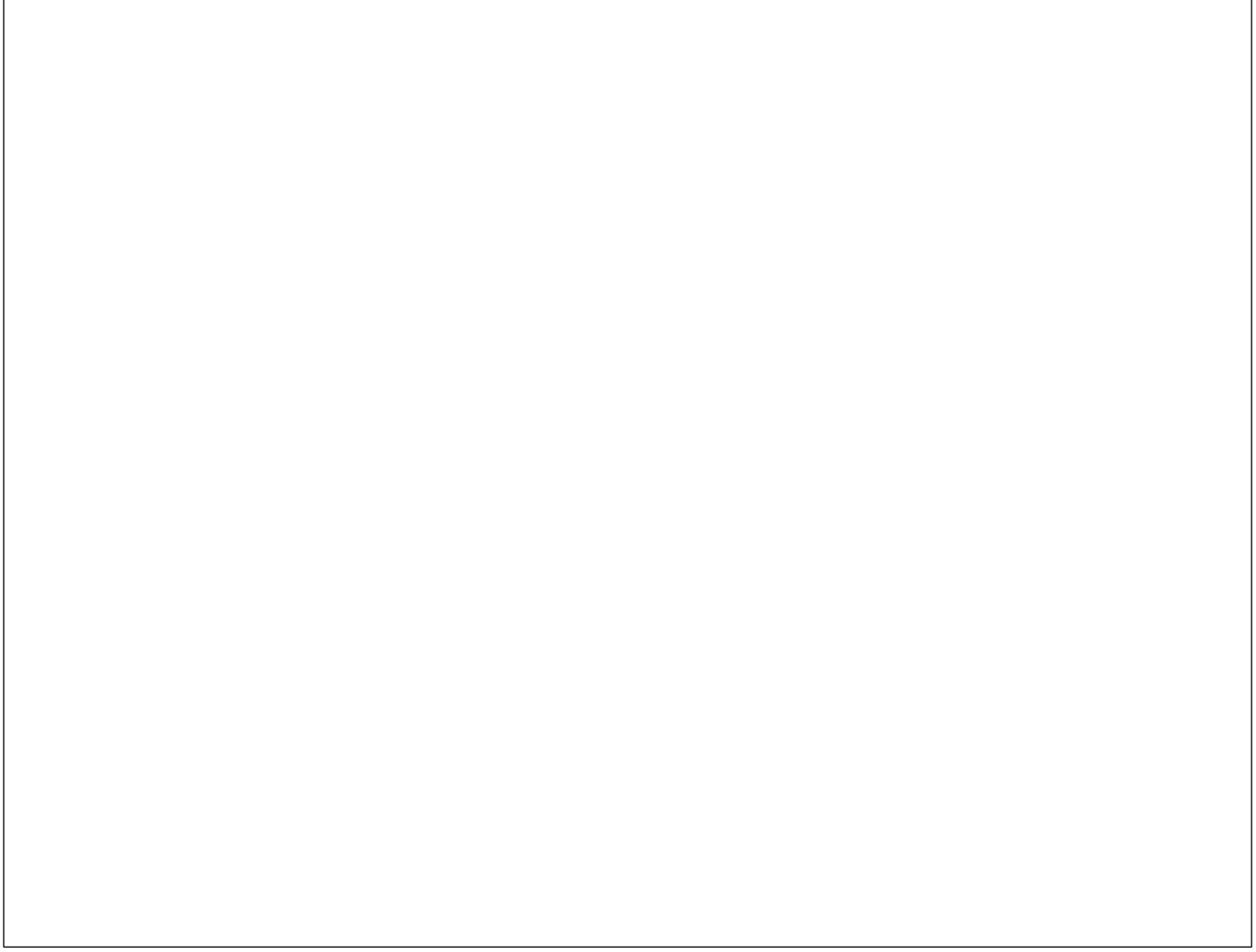
nk you for the email and contacting the MPS "Data Office - Data Rights Unit datarights@met.police.uk". Our office is open Monday to Friday only, and this department is closed on bank holidays.

Please note that we receive a large volume of emails through this mailbox, and all emails are dealt within date order. So it may not be possible to respond to you by return. Therefore we ask you to please be patient and allow us some time to respond to you, before you contact us again. We will get back to you as soon as we can and we thank you again for your patience.

Please note that our response may come from the email address DataRightsDONOTREPLY@met.police.uk . To ensure that our responses are not sent to your spam folder, please add this email address to your safe senders list.

The following types of applications are processed within this mailbox;

- Right of Access Requests (Formerly Subject Access Requests)
- Freedom of Information Act Requests
- National Guidance on Data Sharing for National Police Chiefs' Council (NPCC) in respect of Association of British



Personal Monthly Budget

PROJECTED MONTHLY INCOME	**Income 1**	$2,500
	Extra income	$500
	Total monthly income	**$3,000**
ACTUAL MONTHLY INCOME	**Income 1**	$2,500
	Extra income	$500
	Total monthly income	**$3,000**

PROJECTED BA expenses)
ACTUAL BALA
DIFFERENCE (

HOUSING	**Projected Cost**	**Actual Cost**	**Differen ce**
Mortgage or rent	$1,500	$1,400	$100
Phone	$60	$100	-$40
Electricity	$50	$60	-$10
Gas	$200	$180	$20
Water and sewer			$1,000
Cable			$1,000
Waste removal			$0
Maintenance or repairs			$0
Supplies			$0
Other			$0
Total	**$1,810**	**$1,740**	**$2,070**

ENTERTAINME
Video/DVD
CDs
Movies
Concerts
Sporting events
Live theater
Other
Other
Other
Total

TRANSPORTATION	**Projected Cost**	**Actual Cost**	**Differen ce**
Vehicle payment	$250	$250	$0
Bus/taxi fare			$0
Insurance			$0
Licensing			$0
Fuel			$0
Maintenance			$0
Other			$0
Total	**$250**	**$250**	**$0**

LOANS
Personal
Student
Credit card
Credit card
Credit card
Other
Total

TAXES
Federal

INSURANCE	Projected Cost	Actual Cost	Difference
Home			$0
Health			$0
Life			$0
Other			$0
Total	**$0**	**$0**	**$0**

FOOD	Projected Cost	Actual Cost	Difference
Groceries			$0
Dining out			$0
Other			$0
Total	**$0**	**$0**	**$0**

PETS	Projected Cost	Actual Cost	Difference
Food			$0
Medical			$0
Grooming			$0
Toys			$0
Other			$0
Total	**$0**	**$0**	**$0**

PERSONAL CARE	Projected Cost	Actual Cost	Difference
Medical			$0
Hair/nails			$0
Clothing			$0
Dry cleaning			$0
Health club			$0
Organization dues or fees			$0
Other			$0

State
Local
Other
Total

SAVINGS OR INVESTMENTS
Retirement acc
Investment acc
Other
Total

GIFTS AND DO
Charity 1
Charity 2
Charity 3
Total

LEGAL
Attorney
Alimony
Payments on lie judgment
Other
Total

TOTAL PROJEC
TOTAL ACTUA
TOTAL DIFFER

Total	**$0**	**$0**	**$0**

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· Mailing List

· Help Centre

· Your Applications:

Applications

Sorry. This opportunity is expired. It is now too late to complete your application.

Title	Status	Action
Volunteer Police Cadet Leader	Application Update	ReviewVolunteer Police Cadet Leader

-
- Mailing List
- Help Centre

- Your Applications:

Applications

Sorry. This opportunity is expired. It is now too late to complete your application.

Title	Status	Action
Volunteer Police Cadet Leader	Application Update	ReviewVolunteer Police Cadet Leader
Volunteer Police Cadet Leader	Application Update	ReviewVolunteer Police Cadet Leader
Vehicle Replacement Programme Manager - Band D - Counter Terrorism Policing HQ	Application Update	ReviewVehicle Replacement Programme Manager - Band D - Counter Terrorism Policing HQ
Twickenham DWP Recruitment Event	Registration Update	ReviewTwickenham DWP Recruitment Event
TSU Planner (DC) - Technical Intelligence Exploitation and Development team	Application Update	ReviewTSU Planner (DC) - Technical Intelligence Exploitation and Development team
Travel Services – Band C Service Delivery Manager	Application Update	ReviewTravel Services – Band C Service Delivery Manager
Thamesmead Recruitment Event	Registration Update	ReviewThamesmead Recruitment Event

Technology Lead - Data & Analysis - Counter Terrorism Policing HQ	Application Update	ReviewTechnology Lead - Data & Analysis - Counter Terrorism Policing HQ
Technical Training Manager - Technology CSC - Counter Terrorism Policing HQ	Application Update	ReviewTechnical Training Manager - Technology CSC - Counter Terrorism Policing HQ
Technical Training Manager - Technology CSC - Counter Terrorism Policing HQ	Application Update	ReviewTechnical Training Manager - Technology CSC - Counter Terrorism Policing HQ
Technical Support Operative	Application Update	ReviewTechnical Support Operative
Tactical Policy Advisor – Robbery and Knife Crime team-DC	Application Update	ReviewTactical Policy Advisor – Robbery and Knife Crime team-DC
Supplier Assurance Manager	Application Update	ReviewSupplier Assurance Manager
Supplier Assurance Lead	Application Update	ReviewSupplier Assurance Lead
Substantive Detective Inspector - DPS Specialist investigations	Application Update	ReviewSubstantive Detective Inspector - DPS Specialist investigations
Student Placement - Real Estate Development - Programme Support Officer 2025/2026	Application Update	ReviewStudent Placement - Real Estate Development - Programme Support Officer 2025/2026
Student Placement - Project Support Assistant - Strategy, Performance, and Planning - 2025/2026 - Counter Terrorism Policing HQ	Application Update	ReviewStudent Placement - Project Support Assistant - Strategy, Performance, and Planning - 2025/2026 - Counter Terrorism Policing HQ
Student Placement - Project Support Assistant - Change - 2025/2026 - Counter Terrorism Policing HQ	Application Update	ReviewStudent Placement - Project Support Assistant - Change - 2025/2026 - Counter Terrorism Policing HQ
Student Placement - Programme Support Officer – Real Estate Development, Property Services Department 2024/2025	Application Update	ReviewStudent Placement - Programme Support Officer – Real Estate Development, Property Services Department 2024/2025
Student Placement - Portfolio Office Assistant - Change - 2025/2026 - Counter Terrorism Policing HQ	Application Update	Review Student Placement - Portfolio Office Assistant - Change - 2025/2026 - Counter Terrorism Policing HQ

Student Placement - Performance Analyst - MO14 Performance	Application Update	ReviewStudent Placement - Performance Analyst - MO14 Performance
Student Placement - Media and Communication Administrator 2025/2026	Application Update	ReviewStudent Placement - Media and Communication Administrator 2025/2026
Student Placement - Junior Service Designer - Technology - 2025/2026 - Counter Terrorism Policing HQ	Application Update	ReviewStudent Placement - Junior Service Designer - Technology - 2025/2026 - Counter Terrorism Policing HQ
Student Placement - Junior Project Manager - Technology - 2025/2026 - Counter Terrorism Policing HQ	Application Update	ReviewStudent Placement - Junior Project Manager - Technology - 2025/2026 - Counter Terrorism Policing HQ
Student Placement - Junior DevOps Engineer - Technology - 2025/2026 - Counter Terrorism Policing HQ	Application Update	ReviewStudent Placement - Junior DevOps Engineer - Technology - 2025/2026 - Counter Terrorism Policing HQ
Student Placement - Forensic Business Assistant 2025/2026	Application Update	ReviewStudent Placement - Forensic Business Assistant 2025/2026
Student Placement - Estate and Asset Management Placement Student – Real Estate Management, Property Services Department 2024/2025	Application Update	ReviewStudent Placement - Estate and Asset Management Placement Student – Real Estate Management, Property Services Department 2024/2025
Student Placement - Construction and Building Engineering Services - Real Estate Development , Property Services Department 2024/2025	Application Update	ReviewStudent Placement - Construction and Building Engineering Services - Real Estate Development , Property Services Department 2024/2025
Student Placement - Construction and Building Engineering 2025/2026	Application Update	ReviewStudent Placement - Construction and Building Engineering 2025/2026
Student Placement - Communications Assistant - 2025/2026 - Communications - Counter Terrorism Policing HQ	Application Update	ReviewStudent Placement - Communications Assistant - 2025/2026 - Communications - Counter Terrorism Policing HQ
Student Placement - Business Change Assistant - Change - 2025/2026 - Counter Terrorism Policing HQ	Application Update	ReviewStudent Placement - Business Change Assistant - Change - 2025/2026 - Counter Terrorism Policing HQ

Student Placement - Borders Assistant - Borders Operations Centre - 2025/2026 Counter Terrorism Policing HQ	Application Update	ReviewStudent Placement - Borders Assistant - Borders Operations Centre - 2025/2026 Counter Terrorism Policing HQ
Student Placement - Assurance and Standards Team Assistant - Change - 2025/2026 - Counter Terrorism Policing HQ	Application Update	ReviewStudent Placement - Assurance and Standards Team Assistant - Change - 2025/2026 - Counter Terrorism Policing HQ
Student Placement - Associate End User Computing Engineer - Technology - 2025/2026 - Counter Terrorism Policing HQ	Application Update	ReviewStudent Placement - Associate End User Computing Engineer - Technology - 2025/2026 - Counter Terrorism Policing HQ
Student Placement - Analysis & Research Assistant - Data & Analysis - 2025/2026- Counter Terrorism Policing HQ	Application Update	ReviewStudent Placement - Analysis & Research Assistant - Data & Analysis - 2025/2026- Counter Terrorism Policing HQ
Student Placement - Accredited Financial Investigator - 2025/2026	Application Update	ReviewStudent Placement - Accredited Financial Investigator - 2025/2026
Student Placement - Project / Research Assistant - Data & Analysis - 2025/2026 -Counter Terrorism Policing HQ	Application Update	ReviewStudent Placement - Project / Research Assistant - Data & Analysis - 2025/2026 -Counter Terrorism Policing HQ
Strategy and Local Communications Manager(FTC for 12month)	Application Update	ReviewStrategy and Local Communications Manager(FTC for 12month)
Strategy and Local Communications Manager	Application Update	ReviewStrategy and Local Communications Manager
Staff Officer to Director of Intelligence & Covert Policing	Application Update	ReviewStaff Officer to Director of Intelligence & Covert Policing
Staff Officer to Director General - Detective Inspector - SLT - Counter Terrorism Policing HQ	Application Update	ReviewStaff Officer to Director General - Detective Inspector - SLT - Counter Terrorism Policing HQ
Staff Officer to Director General - Band C - SLT - Counter Terrorism Policing HQ	Application Update	ReviewStaff Officer to Director General - Band C - SLT - Counter Terrorism Policing HQ
SQL Server Database Administrator - Counter Terrorism Policing HQ	Application Update	ReviewSQL Server Database Administrator - Counter Terrorism Policing HQ

SQL Server Database Administrator - Counter Terrorism Policing HQ	Application Update	ReviewSQL Server Database Administrator - Counter Terrorism Policing HQ
Specialist Operations Recovery Manager	Application Update	ReviewSpecialist Operations Recovery Manager
Specialist Operations Recovery Driver - Perivale Car Pound	Application Update	ReviewSpecialist Operations Recovery Driver - Perivale Car Pound
Specialist Crime - North - Homicide Barking - HOLMES Typist	Application Update	ReviewSpecialist Crime - North - Homicide Barking - HOLMES Typist
SIU - Developing Threats Team - Detective Sergeant	Application Update	ReviewSIU - Developing Threats Team - Detective Sergeant
Shift Team – CJ Offender Management Services	Application Update	ReviewShift Team – CJ Offender Management Services
Service Design and Transition Manager - Band C - Technology - Counter Terrorism Policing HQ	Application Update	ReviewService Design and Transition Manager - Band C - Technology - Counter Terrorism Policing HQ
Server Engineer - Technology - CSC - Counter Terrorism Policing HQ	Application Update	ReviewServer Engineer - Technology - CSC - Counter Terrorism Policing HQ
Senior Server Engineer - Counter Terrorism Policing HQ	Application Update	ReviewSenior Server Engineer - Counter Terrorism Policing HQ
Senior Safety Advisor First Aid	Application Update	ReviewSenior Safety Advisor First Aid
Senior Project Manager, Met Business & Operational Support Services	Application Update	ReviewSenior Project Manager, Met Business & Operational Support Services
Senior Project Manager - Change - Counter Terrorism Policing HQ	Application Update	ReviewSenior Project Manager - Change - Counter Terrorism Policing HQ
Senior Project Manager	Application Update	ReviewSenior Project Manager
Senior Project Manager	Application Update	ReviewSenior Project Manager
Senior MetLaw Officer	Application Update	ReviewSenior MetLaw Officer
Senior Media Officer	Application Update	ReviewSenior Media Officer

Senior Manager - Biometrics (Band B)	Application Update	ReviewSenior Manager - Biometrics (Band B)
Senior HR Policy Lead	Application Update	ReviewSenior HR Policy Lead
Senior HR Business Advisor	Application Update	ReviewSenior HR Business Advisor
Senior Development Operations Engineer - Band M - Counter Terrorism Policing HQ	Application Update	ReviewSenior Development Operations Engineer - Band M - Counter Terrorism Policing HQ
Senior Design Standards Manager	Application Update	ReviewSenior Design Standards Manager
Senior Content, Channels and Engagement Officer	Application Update	ReviewSenior Content, Channels and Engagement Officer
Senior Application Operations Engineer -Technology CSC - Counter Terrorism Policing HQ	Application Update	ReviewSenior Application Operations Engineer -Technology CSC - Counter Terrorism Policing HQ
Senior Administrative Assistant	Application Update	ReviewSenior Administrative Assistant
Security Assurance Manager	Application Update	ReviewSecurity Assurance Manager
Secure: Programme Delivery Senior Manager	Application Update	ReviewSecure: Programme Delivery Senior Manager
Safety Camera Prosecutions Team Manager	Application Update	ReviewSafety Camera Prosecutions Team Manager
Safety Camera Prosecutions Manager	Application Update	ReviewSafety Camera Prosecutions Manager
Safety Camera Processing Clerk	Application Update	ReviewSafety Camera Processing Clerk
Safety Academy QUAD Officer	Application Update	ReviewSafety Academy QUAD Officer
Royalty and Specialist Protection - RaSP 400 Inspector	Application Update	ReviewRoyalty and Specialist Protection - RaSP 400 Inspector
Royalty and Specialist Protection - Finance Administrator	Application Update	ReviewRoyalty and Specialist Protection - Finance Administrator
Royalty and Specialist Protection - Finance Administrator	Application Update	ReviewRoyalty and Specialist Protection - Finance Administrator

Review Officer	Application Update	ReviewReview Officer
Resourcing Assistant	Application Update	ReviewResourcing Assistant
Resource Management Office Manager	Application Update	ReviewResource Management Office Manager
Research Officer for Intelligence Development Team (East) - Band E Role	Application Update	ReviewResearch Officer for Intelligence Development Team (East) - Band E Role
Referencing & Vetting Insight and Governance Team Member	Application Update	ReviewReferencing & Vetting Insight and Governance Team Member
Referencing & Vetting Insight and Governance Team Member	Application Update	ReviewReferencing & Vetting Insight and Governance Team Member
Real Time Resourcing Desk Constable	Application Update	ReviewReal Time Resourcing Desk Constable
Real Time Resource Desk Sergeant	Application Update	ReviewReal Time Resource Desk Sergeant
RaSP Armed Deployment Management Unit (ADMU) PC	Application Update	ReviewRaSP Armed Deployment Management Unit (ADMU) PC
RAID Manager - Change - Counter Terrorism Policing HQ	Application Update	ReviewRAID Manager - Change - Counter Terrorism Policing HQ
Quality System Auditor	Application Update	ReviewQuality System Auditor
Quality Assurance Operative	Application Update	ReviewQuality Assurance Operative
Quality Assurance Lead	Application Update	ReviewQuality Assurance Lead
Quality Assurance Lead	Application Update	ReviewQuality Assurance Lead
PSO - Threat Assessment & Intelligence Unit - Intelligence Officer – Researcher	Application Update	ReviewPSO - Threat Assessment & Intelligence Unit - Intelligence Officer – Researcher
ProtectUK Head of Digital Delivery Unit - NaCTSO - Counter Terrorism Policing HQ.	Application Update	ReviewProtectUK Head of Digital Delivery Unit - NaCTSO - Counter Terrorism Policing HQ.
ProtectUK Head of Digital Content & Editorial - NaCTSO - Counter Terrorism Policing	Application Update	ReviewProtectUK Head of Digital Content & Editorial - NaCTSO -

HQ		Counter Terrorism Policing HQ
Project Support Officer	Application Update	ReviewProject Support Officer
Project Manager	Application Update	ReviewProject Manager
Project Adder - PC	Application Update	ReviewProject Adder - PC
Programme Support Officer	Application Update	ReviewProgramme Support Officer
Programme Manager - Change - Counter Terrorism Policing HQ	Application Update	ReviewProgramme Manager - Change - Counter Terrorism Policing HQ
Programme Management Office Administrator	Application Update	ReviewProgramme Management Office Administrator
Professional Standards Unit (MO12/MO4/CRIB) Band D	Application Update	ReviewProfessional Standards Unit (MO12/MO4/CRIB) Band D
Professional Standards - Misconduct Hearings Unit - Case Manager	Application Update	ReviewProfessional Standards - Misconduct Hearings Unit - Case Manager
Pound Officer Perivale	Application Update	ReviewPound Officer Perivale
Police Sergeant – Proactive Firearms Team	Application Update	ReviewPolice Sergeant – Proactive Firearms Team
Police prosecutor	Application Update	ReviewPolice prosecutor
Police prosecutor	Application Update	ReviewPolice prosecutor
Police Liaison Gateway Team	Application Update	ReviewPolice Liaison Gateway Team
Police Constable – Proactive Firearms Team Tasking & Co-ordination	Application Update	ReviewPolice Constable – Proactive Firearms Team Tasking & Co-ordination
Police Constable DPS - Professional Standard Unit	Application Update	ReviewPolice Constable DPS - Professional Standard Unit
POLICE CONSTABLE - CYBER CRIME PROACTIVE UNIT	Application Update	ReviewPOLICE CONSTABLE - CYBER CRIME PROACTIVE UNIT
PMO Lead - Change - Counter Terrorism Policing HQ	Application Update	ReviewPMO Lead - Change - Counter Terrorism Policing HQ
Performance and Assurance	Application	ReviewPerformance and Assurance Team Member

Team Member	Update	
People & Development Lead, Operational Support Services	Application Update	ReviewPeople & Development Lead, Operational Support Services
PC Facial Recognition Technologies Team	Application Update	ReviewPC Facial Recognition Technologies Team
PC - MO6 Public Order Crime Team	Application Update	ReviewPC - MO6 Public Order Crime Team
PC - Covert Human Intelligence Source (CHIS) Handler	Application Update	ReviewPC - Covert Human Intelligence Source (CHIS) Handler
PA to DCS Band E	Application Update	ReviewPA to DCS Band E
Outreach Support	Talent Bank - Withdrawn	ReviewOutreach Support
Operations Support Officer	Application Update	ReviewOperations Support Officer
Operations Manager	Application Update	ReviewOperations Manager
Operations Lead - Superintendent	Application Update	ReviewOperations Lead - Superintendent
Operations Inspector	Application Update	ReviewOperations Inspector
Op Ford - Force Elected Official Advisor (FEOA) - Constable PaDP	Application Update	ReviewOp Ford - Force Elected Official Advisor (FEOA) - Constable PaDP
Online Insight Session	Registration Update	ReviewOnline Insight Session
Online Insight Session	Registration Update	ReviewOnline Insight Session
Office Manager - Band D - MIR - SO15	Application Update	ReviewOffice Manager - Band D - MIR - SO15
NPPF Step Two May 2024 Legal Exam - (Previously OSPRE) – Inspectors	Application Update	ReviewNPPF Step Two May 2024 Legal Exam - (Previously OSPRE) – Inspectors
NPPF Step Two March 2025 Legal Exam (Previously OSPRE) - Sergeant	Application Update	ReviewNPPF Step Two March 2025 Legal Exam (Previously OSPRE) - Sergeant
NPoCC Planner - Band E	Application Withdrawn	ReviewNPoCC Planner - Band E

New Scotland Yard Insight Session	Registration Update	ReviewNew Scotland Yard Insight Session
NCPP - CTSFO National Training Manager - Inspector - Counter Terrorism Policing HQ	Application Update	ReviewNCPP - CTSFO National Training Manager - Inspector - Counter Terrorism Policing HQ
National Surveillance Scheduling Team and Capability Support - Detective Inspector - Counter Terrorism Policing HQ	Application Update	ReviewNational Surveillance Scheduling Team and Capability Support - Detective Inspector - Counter Terrorism Policing HQ
National Referral Mechanism Coordinator	Application Update	ReviewNational Referral Mechanism Coordinator
National Police Chiefs' Council - National Serious & Organised Crime Portfolio (NSOC) Project Manager	Application Update	ReviewNational Police Chiefs' Council - National Serious & Organised Crime Portfolio (NSOC) Project Manager
National Police Chiefs Council - Programme Manager	Application Update	ReviewNational Police Chiefs Council - Programme Manager
National Police Chiefs Council - Programme Manager	Application Update	ReviewNational Police Chiefs Council - Programme Manager
National Police Chiefs Council - Internal Communications Manager	Application Update	ReviewNational Police Chiefs Council - Internal Communications Manager
National Investigators Examination (NIE) - 3rd June 2025	Application Update	ReviewNational Investigators Examination (NIE) - 3rd June 2025
National Firearms Instructor (NFI)	Application Update	ReviewNational Firearms Instructor (NFI)
National Counter Terrorism Security Office (NaCTSO) – Venues and Public Spaces Unit- Detective Inspector - Counter Terrorism Policing HQ	Application Update	ReviewNational Counter Terrorism Security Office (NaCTSO) – Venues and Public Spaces Unit- Detective Inspector - Counter Terrorism Policing HQ
Motorcycle Technician	Application Update	ReviewMotorcycle Technician
Motor Vehicle Technician	Application Update	ReviewMotor Vehicle Technician
Motor Vehicle Technician	Application Update	ReviewMotor Vehicle Technician
Motor Vehicle Technician	Application Update	ReviewMotor Vehicle Technician

MO7 Taskforce TSG -Police Sergeant	Application Update	ReviewMO7 Taskforce TSG -Police Sergeant
MO7 Taskforce Mounted Branch Inspector	Application Update	ReviewMO7 Taskforce Mounted Branch Inspector
MO3 Technical Surveillance Unit-DC - AV Ops	Application Update	ReviewMO3 Technical Surveillance Unit-DC - AV Ops
MO2 Met Intel - ANPR Auditor - Innovation Deployment & Compliance Team	Application Update	ReviewMO2 Met Intel - ANPR Auditor - Innovation Deployment & Compliance Team
MO19 Specialist Firearms Command – Development, Delivery, Equipment & Finance Sergeant	Application Update	ReviewMO19 Specialist Firearms Command – Development, Delivery, Equipment & Finance Sergeant
MO19 Specialist Firearms Command - Tactical Firearms Commander Inspector (UNARMED)	Application Update	ReviewMO19 Specialist Firearms Command - Tactical Firearms Commander Inspector (UNARMED)
MO19 Specialist Firearms Command - Tactical Firearms Commander Detective Inspector (UNARMED)	Application Update	ReviewMO19 Specialist Firearms Command - Tactical Firearms Commander Detective Inspector (UNARMED)
MMU Vehicle Technician	Application Update	ReviewMMU Vehicle Technician
Misconduct Hearings Unit - Usher	Application Update	ReviewMisconduct Hearings Unit - Usher
MetLaw Clerk	Application Update	ReviewMetLaw Clerk
MetLaw and Allocations Clerk	Application Update	ReviewMetLaw and Allocations Clerk
MetCC Workforce Management Lead	Application Update	ReviewMetCC Workforce Management Lead
MetCC Welfare Support Team Supervisor	Application Update	ReviewMetCC Welfare Support Team Supervisor
MetCC Welfare Support Team Member	Application Update	ReviewMetCC Welfare Support Team Member
MetCC Centre Facilities Support Staff	Application Update	ReviewMetCC Centre Facilities Support Staff
MetCC Centre Facilities Supervisor	Application Update	ReviewMetCC Centre Facilities Supervisor
Met Intel PC ANPR	Application	ReviewMet Intel PC ANPR Investigations

Investigations	Update	
Met Intel DS ANPR Investigations	Application Update	Review Met Intel DS ANPR Investigations
Met Intel 24/7 Intelligence Officer	Application Update	Review Met Intel 24/7 Intelligence Officer
Met Intel 24/7 - Intelligence Supervisor	Application Update	Review Met Intel 24/7 - Intelligence Supervisor
Met Intel 24/7 - Intelligence Manager - Duty Officer	Application Update	Review Met Intel 24/7 - Intelligence Manager - Duty Officer
Met Business Services - Talent Acquisition Manager	Application Update	Review Met Business Services - Talent Acquisition Manager
Met Business Services - Talent Acquisition Lead	Application Update	Review Met Business Services - Talent Acquisition Lead
Media Officer	Application Update	Review Media Officer
MBS Reporting Senior Analyst	Application Update	Review MBS Reporting Senior Analyst
LMS Administrator	Application Update	Review LMS Administrator
Licensing and Accreditation Training Development Officer - VAP's (NaCTSO) - Counter Terrorism Policing HQ	Application Update	Review Licensing and Accreditation Training Development Officer - VAP's (NaCTSO) - Counter Terrorism Policing HQ
Licensing Admin Support Officer	Application Update	Review Licensing Admin Support Officer
Leadership Facilitator	Application Withdrawn	Review Leadership Facilitator
Leadership Academy Trainer/Facilitator	Application Update	Review Leadership Academy Trainer/Facilitator
Leadership Academy Administration/Team Support	Application Update	Review Leadership Academy Administration/Team Support
Leadership Academy Administration/Team Supervisor	Application Update	Review Leadership Academy Administration/Team Supervisor
Lead Software Developer - Counter Terrorism Policing HQ	Application Update	Review Lead Software Developer - Counter Terrorism Policing HQ
Lead Dev Ops Engineer (Cloud Platform) - Technology CSC - Police Staff - Counter	Application Update	Review Lead Dev Ops Engineer (Cloud Platform) - Technology CSC - Police Staff - Counter Terrorism

Terrorism Policing HQ		Policing HQ
Lead Data Analyst in the Strategic Insight Unit	Application Update	ReviewLead Data Analyst in the Strategic Insight Unit
Junior Software Developer - Counter Terrorism Policing HQ	Application Update	ReviewJunior Software Developer - Counter Terrorism Policing HQ
Junior Data Engineer	Application Update	ReviewJunior Data Engineer
Interest in being promoted to a Sergeant? Register your interest here and we will notify you when the promotion process launches.	Talent Bank - Withdrawn	ReviewInterest in being promoted to a Sergeant? Register your interest here and we will notify you when the promotion process launches.
Interest in being promoted to a Chief Superintendent? Register your interest here and we will notify you when the promotion process launches.	Talent Bank - Withdrawn	ReviewInterest in being promoted to a Chief Superintendent? Register your interest here and we will notify you when the promotion process launches.
Intelligence Officer - Public Order Public Safety Intelligence - MO2	Application Update	ReviewIntelligence Officer - Public Order Public Safety Intelligence - MO2
Intelligence Officer - PC - Intelligence - Counter Terrorism Policing HQ	Application Update	ReviewIntelligence Officer - PC - Intelligence - Counter Terrorism Policing HQ
Intelligence Officer - DC - Intelligence - Counter Terrorism Policing HQ	Application Update	ReviewIntelligence Officer - DC - Intelligence - Counter Terrorism Policing HQ
Intelligence Officer - Bomb Data Centre - FMT - SO15	Application Update	ReviewIntelligence Officer - Bomb Data Centre - FMT - SO15
Intelligence Manager – Public Order & Public Safety Intelligence - Inspector – MO2	Application Update	ReviewIntelligence Manager – Public Order & Public Safety Intelligence - Inspector – MO2
Intelligence Manager - Public Order & Public Safety Intelligence - Detective Inspector - MO2	Application Update	ReviewIntelligence Manager - Public Order & Public Safety Intelligence - Detective Inspector - MO2
Inspector to Chief Inspector Promotion Process 2024	Application Update	ReviewInspector to Chief Inspector Promotion Process 2024
Inspector - NPoCC SIB	Application Update	ReviewInspector - NPoCC SIB
Insight, Data and Evaluation	Application	ReviewInsight, Data and Evaluation Senior Manager

Senior Manager	Update	
Infrastructure Engineer	Application Update	ReviewInfrastructure Engineer
IDD - Junior Business Design Analyst	Application Update	ReviewIDD - Junior Business Design Analyst
Hub Coordination Team Manager - Band D - Prisons - Counter Terrorism Policing HQ	Application Update	ReviewHub Coordination Team Manager - Band D - Prisons - Counter Terrorism Policing HQ
HR Performance and Reporting Manager	Application Update	ReviewHR Performance and Reporting Manager
HR Performance and Reporting Lead	Application Update	ReviewHR Performance and Reporting Lead
HR People Performance Improvement Team – Senior Lead	Application Update	ReviewHR People Performance Improvement Team – Senior Lead
HR People Performance Improvement Team – Senior Lead	Application Update	ReviewHR People Performance Improvement Team – Senior Lead
HR Change Support Officer	Application Update	ReviewHR Change Support Officer
HR Administrator - Counter Terrorism Policing HQ	Application Update	ReviewHR Administrator - Counter Terrorism Policing HQ
HOLMES Typist	Application Update	ReviewHOLMES Typist
Higher Performance Analyst - Strategy, Planning & Performance - Counter Terrorism Policing HQ	Application Update	ReviewHigher Performance Analyst - Strategy, Planning & Performance - Counter Terrorism Policing HQ
Higher Computer Aided Surveyor / 3D Specialist	Application Update	ReviewHigher Computer Aided Surveyor / 3D Specialist
Health & Safety/Estates Manager - Band D - Counter Terrorism Policing HQ	Application Update	ReviewHealth & Safety/Estates Manager - Band D - Counter Terrorism Policing HQ
Head of Visits and Events	Application Update	ReviewHead of Visits and Events
Head of Visits and Events	Application Update	ReviewHead of Visits and Events
Head of Security Architecture	Application Update	ReviewHead of Security Architecture
Head of Portfolio Office (Met	Application	ReviewHead of Portfolio Office (Met

Business & Operational Support Services)	Update	Business & Operational Support Services)
Head of Portfolio Office (Met Business & Operational Support Services)	Application Update	ReviewHead of Portfolio Office (Met Business & Operational Support Services)
Head of Data Literacy and Culture	Application Update	ReviewHead of Data Literacy and Culture
Head of Data Engineering	Application Update	ReviewHead of Data Engineering
Grievance Assessor	Application Update	ReviewGrievance Assessor
Forensic Scientist	Application Update	ReviewForensic Scientist
Forensic Management Team - Ops Support - Detective Sergeant - Counter Terrorism Policing SO15	Application Update	ReviewForensic Management Team - Ops Support - Detective Sergeant - Counter Terrorism Policing SO15
Forensic Examiner – Forensic Firearms Unit (FFU)	Application Update	ReviewForensic Examiner – Forensic Firearms Unit (FFU)
Forensic Collision Investigator – Trainee	Application Update	ReviewForensic Collision Investigator – Trainee
Fleet Contract Lifecycle Support	Application Withdrawn	ReviewFleet Contract Lifecycle Support
Fleet Administrator	Application Update	ReviewFleet Administrator
Fingerprint Team Leader	Application Update	ReviewFingerprint Team Leader
Financial Investigator	Application Update	ReviewFinancial Investigator
Finance Business Partner - Band M	Application Update	ReviewFinance Business Partner - Band M
Facial Identification Intelligence Researcher	Application Update	ReviewFacial Identification Intelligence Researcher
Facial Identification Intelligence Research Supervisor	Application Update	ReviewFacial Identification Intelligence Research Supervisor
Experienced Intelligence Analyst	Application Update	ReviewExperienced Intelligence Analyst
Equip for Service (EFS) Coordinator	Application Update	ReviewEquip for Service (EFS) Coordinator

Equality Impact Assessment Manager	Application Update	ReviewEquality Impact Assessment Manager
Enquiry Officer	Application Update	ReviewEnquiry Officer
Electronics Senior Technologist	Application Update	ReviewElectronics Senior Technologist
Electronics Development Manager	Application Update	ReviewElectronics Development Manager
Electronics Development Manager	Application Update	ReviewElectronics Development Manager
Electronics Development Engineer	Application Update	ReviewElectronics Development Engineer
Electronics Development Engineer	Application Update	ReviewElectronics Development Engineer
Electronics Development Engineer	Application Update	ReviewElectronics Development Engineer
Electronics Development Engineer	Application Update	ReviewElectronics Development Engineer
Edmonton Insight Session	Registration Update	ReviewEdmonton Insight Session
DS - Public Order Crime Team	Application Update	ReviewDS - Public Order Crime Team
Driver Assistance Centre Team Leader	Application Update	ReviewDriver Assistance Centre Team Leader
DPS Intelligence Bureau - Integrity Screening Unit - Detective Constable (Substantive)	Application Update	ReviewDPS Intelligence Bureau - Integrity Screening Unit -Detective Constable (Substantive)
DPS Digital Exploitation Team: Digital Intelligence Analyst - Anti-Corruption and Abuse Command	Application Update	ReviewDPS Digital Exploitation Team: Digital Intelligence Analyst - Anti-Corruption and Abuse Command
DNA Services Consultant - BIOMETRICS UNIT (Band L)	Application Update	ReviewDNA Services Consultant - BIOMETRICS UNIT (Band L)
Distribution Driver	Application Update	ReviewDistribution Driver
Disruptions & APMIS Lead	Application Update	ReviewDisruptions & APMIS Lead
Disclosure Support (deputy to Disclosure Manager, Economic Crime)	Application Update	ReviewDisclosure Support (deputy to Disclosure Manager, Economic

		Crime)
Digital Strategy Advisor - Digital Forensics	Application Update	ReviewDigital Strategy Advisor - Digital Forensics
Digital Strategy Advisor - Digital Forensics	Application Update	ReviewDigital Strategy Advisor - Digital Forensics
Digital Project Officer - NDES Service 3 - SO15	Application Update	ReviewDigital Project Officer - NDES Service 3 - SO15
Digital Operations - Digital Investigator (DMI) - PC	Application Update	ReviewDigital Operations - Digital Investigator (DMI) - PC
Digital Forensic Technician	Application Update	ReviewDigital Forensic Technician
Digital Forensic Manager	Application Update	ReviewDigital Forensic Manager
Digital Engagement Officer	Application Update	ReviewDigital Engagement Officer
Development Technician - Software Developer	Application Update	ReviewDevelopment Technician - Software Developer
Development Technician - Software Developer	Application Update	ReviewDevelopment Technician - Software Developer
Development Operations Engineer - Band N - Counter Terrorism Policing HQ	Application Update	ReviewDevelopment Operations Engineer - Band N - Counter Terrorism Policing HQ
Development Engineer - Software Developer	Application Update	ReviewDevelopment Engineer - Software Developer
Development Engineer	Application Update	ReviewDevelopment Engineer
Development Engineer	Application Update	ReviewDevelopment Engineer
Developing Threats Team – PC	Application Update	ReviewDeveloping Threats Team – PC
Dev Ops Engineer (Cloud Platform) - Technology CSC - Police Staff - Counter Terrorism Policing HQ	Application Update	ReviewDev Ops Engineer (Cloud Platform) - Technology CSC - Police Staff - Counter Terrorism Policing HQ
Detective Sergeant London Region Protected Persons Unit (LRPPU)	Application Update	ReviewDetective Sergeant London Region Protected Persons Unit (LRPPU)
Detective Sergeant Economic Crime - Fraud investigation teams	Application Update	ReviewDetective Sergeant Economic Crime - Fraud investigation teams

Detective Sergeant - Image Retrieval Unit	Application Update	ReviewDetective Sergeant - Image Retrieval Unit
Detective Sergeant - Frontline Policing Delivery Unit - Detective Pathways	Application Update	ReviewDetective Sergeant - Frontline Policing Delivery Unit - Detective Pathways
Detective Sergeant - Complex Investigation Team (CIT)	Application Update	ReviewDetective Sergeant - Complex Investigation Team (CIT)
Detective Inspector-Homicide Team	Application Update	ReviewDetective Inspector-Homicide Team
Detective Inspector – Trident Reactive : Specialist Crime (West Hub)	Application Update	ReviewDetective Inspector – Trident Reactive : Specialist Crime (West Hub)
Detective Inspector - Trident Reactive South	Application Update	ReviewDetective Inspector - Trident Reactive South
Detective Inspector - Specialist Investigation Unit - DPS	Application Withdrawn	ReviewDetective Inspector - Specialist Investigation Unit - DPS
Detective Inspector - Inquiry & Review Support Command (IRSC)	Application Update	ReviewDetective Inspector - Inquiry & Review Support Command (IRSC)
Detective Inspector - Homicide Teams at Barking	Application Update	ReviewDetective Inspector - Homicide Teams at Barking
Detective Constable - DASO - Professional Standards	Application Update	ReviewDetective Constable - DASO - Professional Standards
Designated Detention Officer	Application Update	ReviewDesignated Detention Officer
Deputy National Coordinator, Protect & Prepare - Supt - Counter Terrorism Policing HQ	Application Update	ReviewDeputy National Coordinator, Protect & Prepare - Supt - Counter Terrorism Policing HQ
DDaT Operations Manager	Application Update	ReviewDDaT Operations Manager
DC - Public Order Crime Team	Application Update	ReviewDC - Public Order Crime Team
Data Quality Management Lead	Application Update	ReviewData Quality Management Lead
Data Management Officer Indexer - Band E - NDMC - Counter Terrorism Policing HQ	Application Update	ReviewData Management Officer Indexer - Band E - NDMC - Counter Terrorism Policing HQ
Cyber Unit - DI Protect,	Application	ReviewCyber Unit - DI Protect,

Prepare and Prevent	Update	Prepare and Prevent
Custody Healthcare Practitioner Open Day Event - Hammersmith Police Station - Thursday 27th June 2024 13:00PM	Registration Update	ReviewCustody Healthcare Practitioner Open Day Event - Hammersmith Police Station - Thursday 27th June 2024 13:00PM
Custody Healthcare Practitioner Open Day Event - Charing Cross Police Station - Thursday 24th October 2024 13:00PM	Registration Update	ReviewCustody Healthcare Practitioner Open Day Event - Charing Cross Police Station - Thursday 24th October 2024 13:00PM
Custody Healthcare Practitioner (Registered Nurse / Registered Paramedic)	Application Update	ReviewCustody Healthcare Practitioner (Registered Nurse / Registered Paramedic)
CTSFO Tactical Advisor	Application Update	ReviewCTSFO Tactical Advisor
CSC - Offender Management - International Assistance Unit (IAU) Detective Constable	Application Update	ReviewCSC - Offender Management - International Assistance Unit (IAU) Detective Constable
CSC - Offender Management - Central Orders Team Police Constable	Application Update	ReviewCSC - Offender Management - Central Orders Team Police Constable
Crime Academy DC - Interview Team	Application Update	ReviewCrime Academy DC - Interview Team
Covert Admin (COVAD) Deputy Manager	Application Update	ReviewCovert Admin (COVAD) Deputy Manager
Counter Weapons Threat Team Officer - PC - Counter Terrorism Policing HQ	Application Update	ReviewCounter Weapons Threat Team Officer - PC - Counter Terrorism Policing HQ
Counter Terrorism Security Advisor (CTSA)	Application Update	ReviewCounter Terrorism Security Advisor (CTSA)
Counter Terrorism Security Advisor (CTSA)	Application Update	ReviewCounter Terrorism Security Advisor (CTSA)
Counter Terrorism Police Liaison Officer - DSU - IOPS - Counter Terrorism Policing SO15	Application Withdrawn	ReviewCounter Terrorism Police Liaison Officer - DSU - IOPS - Counter Terrorism Policing SO15
Correspondence Manager	Application Update	ReviewCorrespondence Manager
Coroner's Officer Manager	Application Update	ReviewCoroner's Officer Manager

Contract Lifecycle Support	Application Update	ReviewContract Lifecycle Support
CONNECT Support Team- User Support Specialist	Application Update	ReviewCONNECT Support Team- User Support Specialist
Compliance & Assurance Officer - Counter Terrorism Policing HQ	Application Update	ReviewCompliance & Assurance Officer - Counter Terrorism Policing HQ
Complex Investigation Team (CIT) Police Constable SOIT	Application Update	ReviewComplex Investigation Team (CIT) Police Constable SOIT
Complex Investigation Team (CIT) Disclosure Support Officer	Application Update	ReviewComplex Investigation Team (CIT) Disclosure Support Officer
Complex Investigation Team (CIT) Detective Inspector	Application Update	ReviewComplex Investigation Team (CIT) Detective Inspector
Complex Investigation Team (CIT) Detective Constable	Application Update	ReviewComplex Investigation Team (CIT) Detective Constable
Complaint Resolution Unit (CRU) - Complaint handler	Application Update	ReviewComplaint Resolution Unit (CRU) - Complaint handler
Complaint Handler	Application Update	ReviewComplaint Handler
Communications Manager – Marketing, Campaigns and Internal Communications	Application Update	ReviewCommunications Manager – Marketing, Campaigns and Internal Communications
Communications Lead – Chief Media Officer	Application Update	ReviewCommunications Lead – Chief Media Officer
Communication Planning Manager	Application Update	ReviewCommunication Planning Manager
Commercial Lead Solution Delivery	Application Update	ReviewCommercial Lead Solution Delivery
Commercial Consultant- Assurance and Risk	Application Update	ReviewCommercial Consultant- Assurance and Risk
Commercial Consultant	Application Update	ReviewCommercial Consultant
Commercial Apprentice	Application Update	ReviewCommercial Apprentice
CJOMS Shift Team Manager	Application Update	ReviewCJOMS Shift Team Manager
Character Enquiry Centre Team Leader	Application Update	ReviewCharacter Enquiry Centre Team Leader

Centralised Administration Team Member	Application Update	ReviewCentralised Administration Team Member
Centralised Admin - Typing Services	Application Update	ReviewCentralised Admin - Typing Services
CCTV Investigations Assessment/Review - Band D - NDES S3 - SO15	Application Update	ReviewCCTV Investigations Assessment/Review - Band D - NDES S3 - SO15
Casualty Bureau (CB) Co-ordinator	Application Update	ReviewCasualty Bureau (CB) Co-ordinator
Case Management Administrator	Application Update	ReviewCase Management Administrator
Capital Manager	Application Update	ReviewCapital Manager
Business Change Supervisor	Application Update	ReviewBusiness Change Supervisor
Business Change Specialist	Application Update	ReviewBusiness Change Specialist
Business Change Manager - Change - Counter Terrorism Policing HQ	Application Update	ReviewBusiness Change Manager - Change - Counter Terrorism Policing HQ
Business Change Lead - Change - Counter Terrorism Policing HQ	Application Update	ReviewBusiness Change Lead - Change - Counter Terrorism Policing HQ
Business Change Communications Specialist	Application Update	ReviewBusiness Change Communications Specialist
Business Assurance Junior Manager	Application Update	ReviewBusiness Assurance Junior Manager
Business and Policy Support Officer - Data & Analysis - Counter Terrorism Policing HQ	Application Update	ReviewBusiness and Policy Support Officer - Data & Analysis - Counter Terrorism Policing HQ
Business Analyst – Strategy, Planning and Performance (SPP) Counter Terrorism Policing HQ	Application Update	ReviewBusiness Analyst – Strategy, Planning and Performance (SPP) Counter Terrorism Policing HQ
Building Manager	Application Update	ReviewBuilding Manager
Biometric Intelligence Case Officer - Band D - NDES S6 - SO15	Application Update	ReviewBiometric Intelligence Case Officer - Band D - NDES S6 - SO15

Beckton Recruitment Event	Registration Update	ReviewBeckton Recruitment Event
BCU Learning and Development Lead	Application Update	ReviewBCU Learning and Development Lead
BCU Learning and Development Co-ordinator	Application Update	ReviewBCU Learning and Development Co-ordinator
Band E Specialist Crime CPS Liaison Team / Met Police Room Central Criminal Court	Application Update	ReviewBand E Specialist Crime CPS Liaison Team / Met Police Room Central Criminal Court
Audit and Risk Manager - Strategic Planning & Risk	Application Update	ReviewAudit and Risk Manager - Strategic Planning & Risk
Apprentice Vehicle Mechanical Electrical Trim (M.E.T.) Technician	Application Update	ReviewApprentice Vehicle Mechanical Electrical Trim (M.E.T.) Technician
Apprentice Motorcycle Technician	Application Update	Review Apprentice Motorcycle Technician
Anti-Corruption and Abuse (ACAC) Intelligence Bureau.	Application Update	ReviewAnti-Corruption and Abuse (ACAC) Intelligence Bureau.
Administrative Officer – MO2 - HQ Operations	Application Update	ReviewAdministrative Officer – MO2 - HQ Operations
202402 - MPS Return Scheme Retired Officers	Application Update	Review202402 - MPS Return Scheme Retired Officers
202402 - MPS Return Scheme Approaching Retirement	Application Update	Review202402 - MPS Return Scheme Approaching Retirement
2024-07 Police Constable Degree Apprenticeship (PCDA)	Application Update	Review2024-07 Police Constable Degree Apprenticeship (PCDA)
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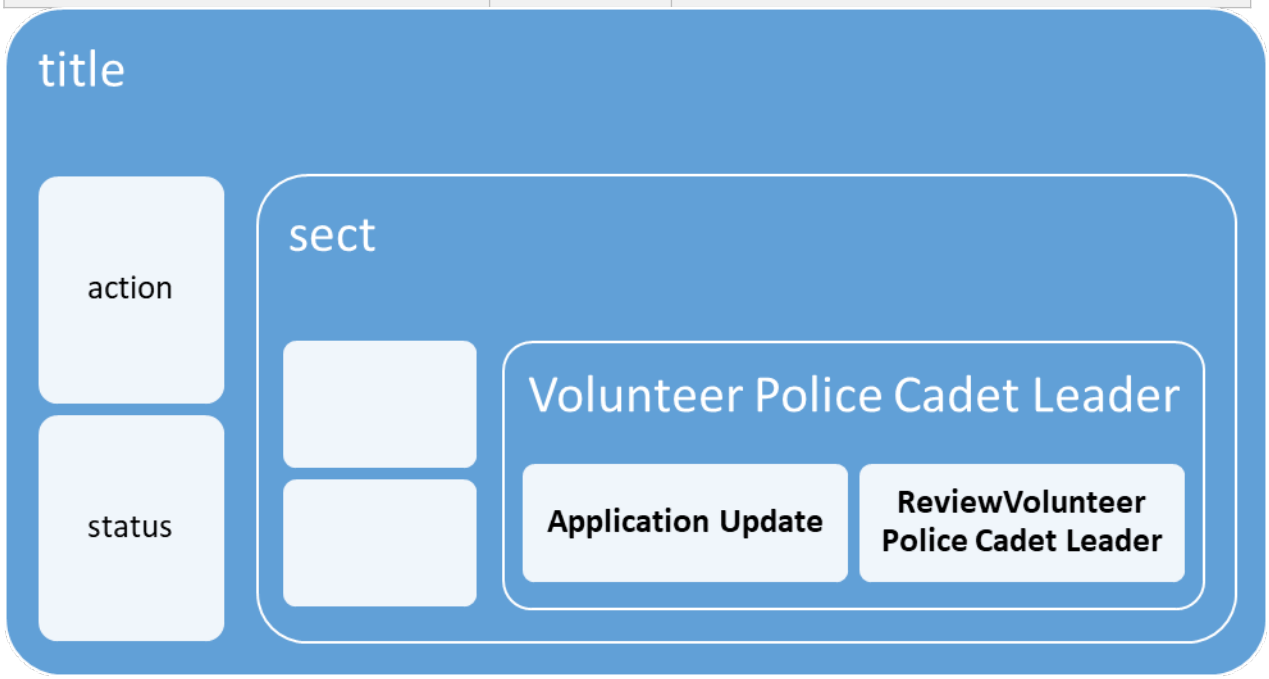

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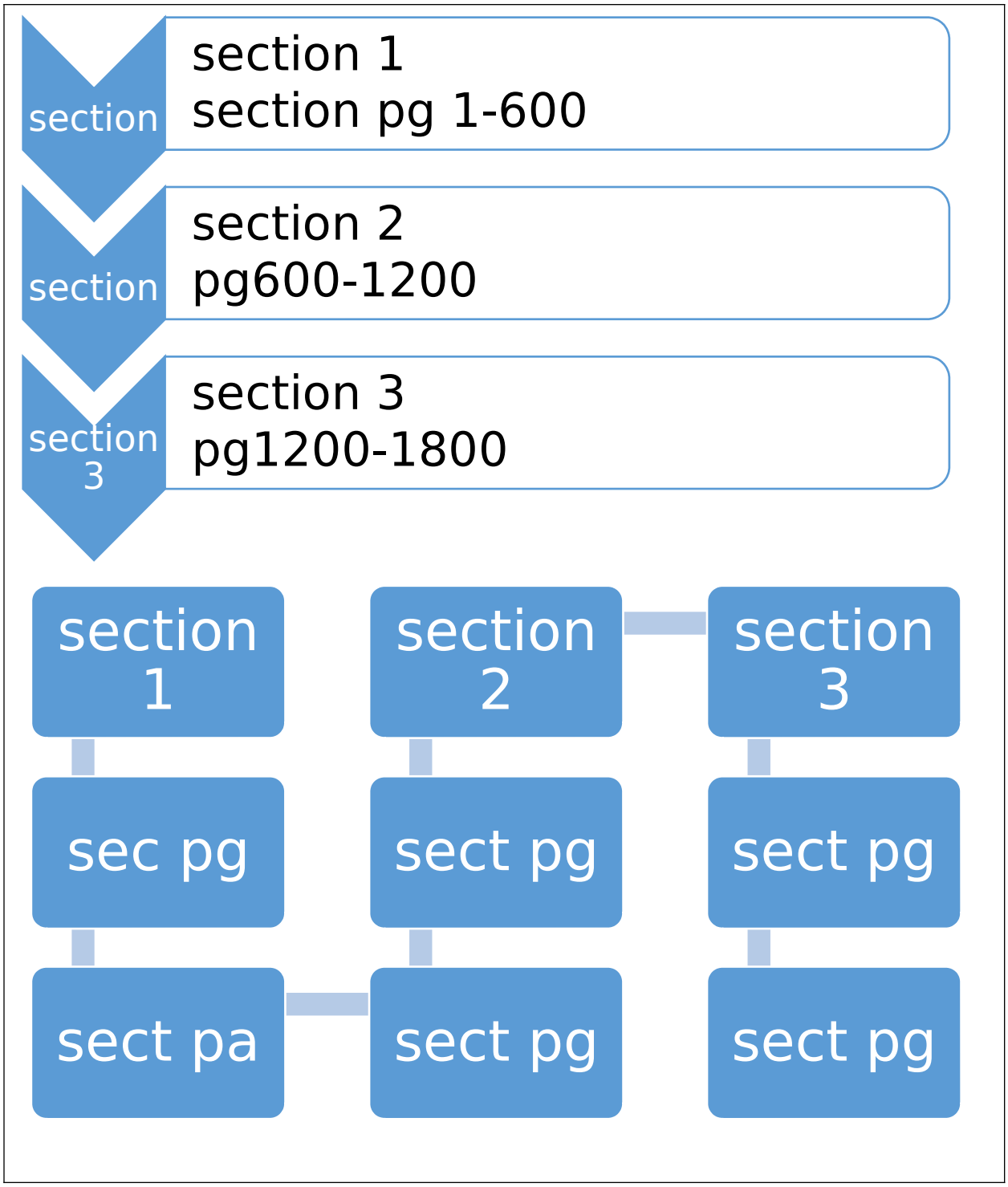
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section
section 2
pg600-1200
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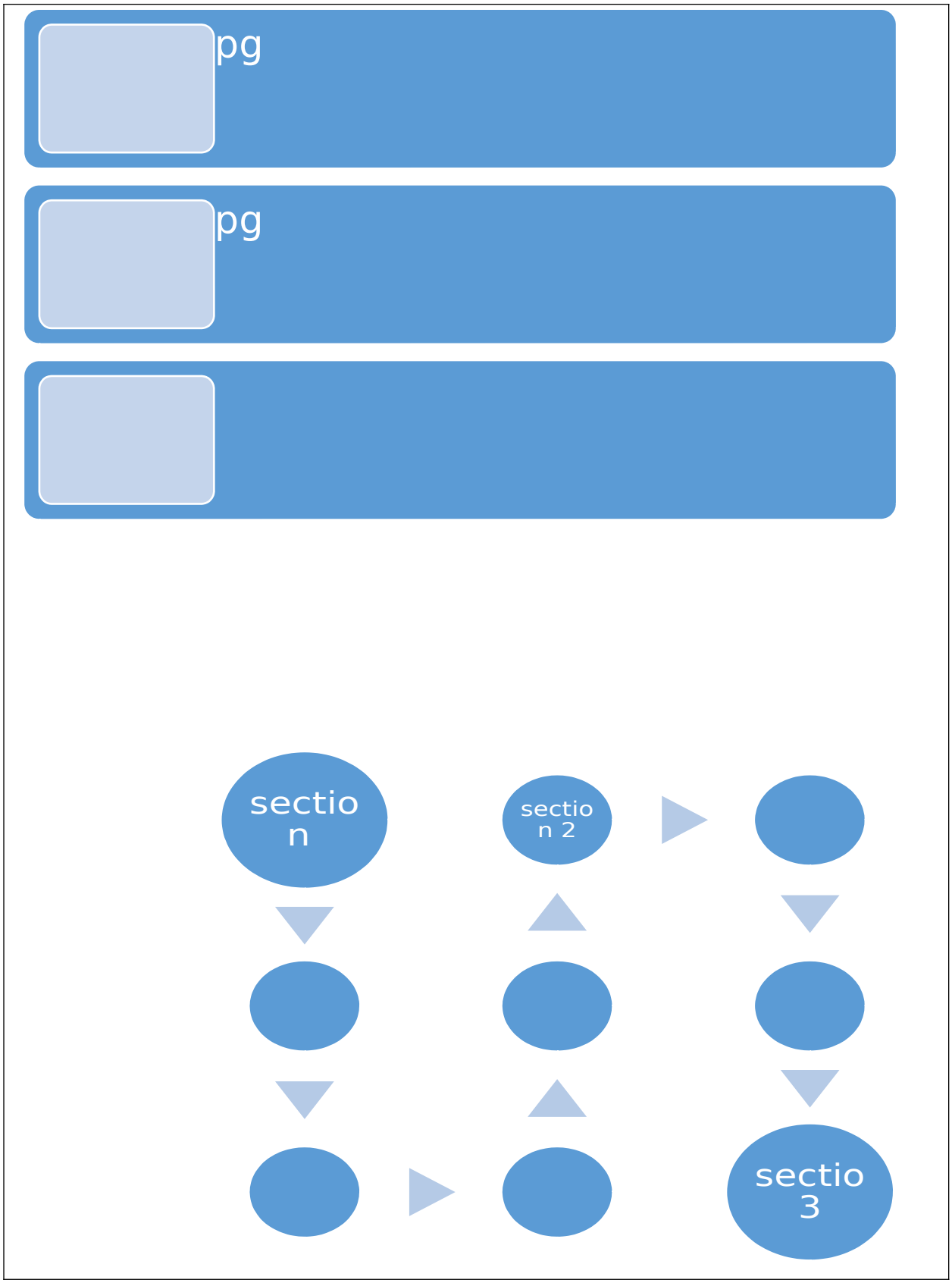
sect pa
sect pg
sect pg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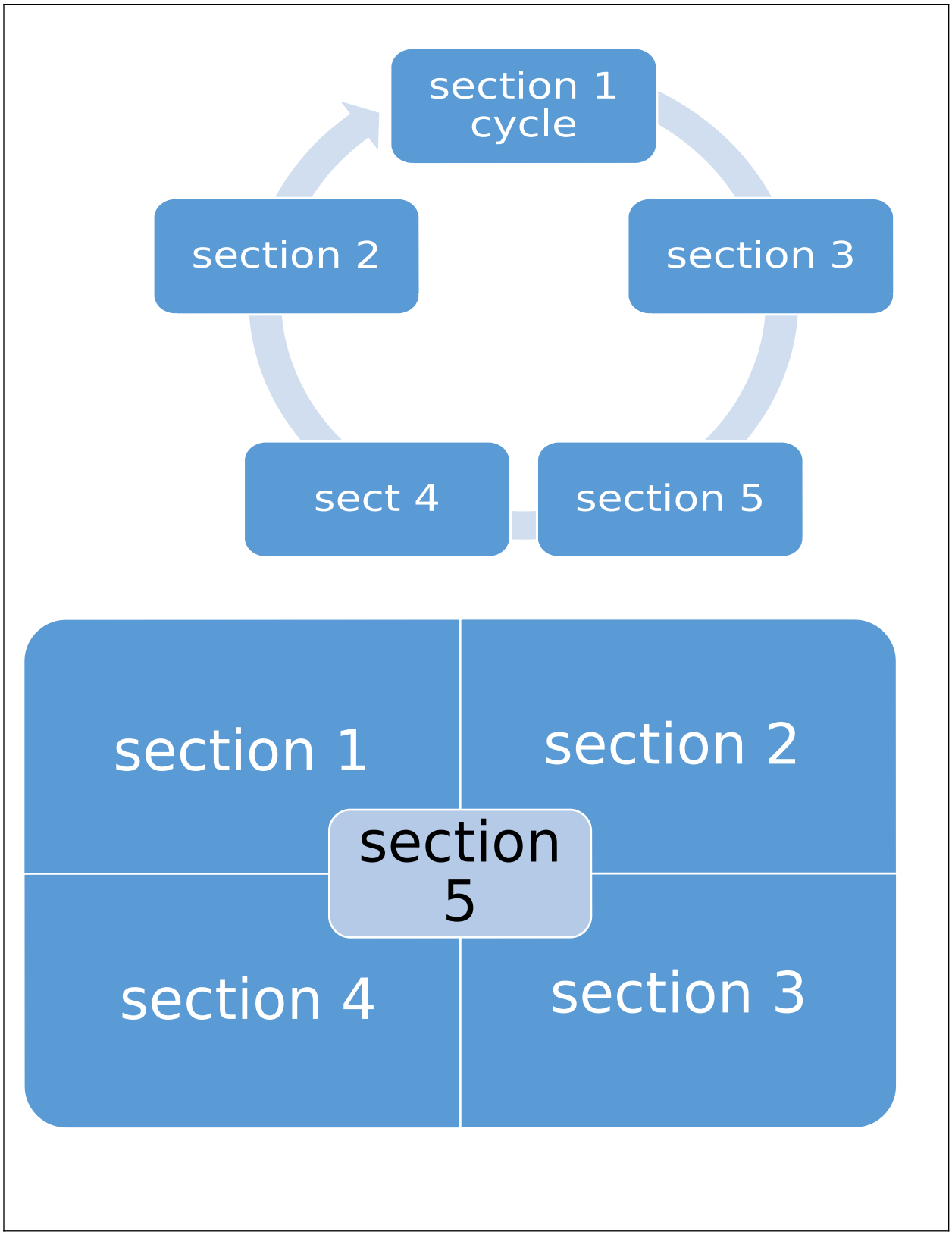
section 2
section 3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section
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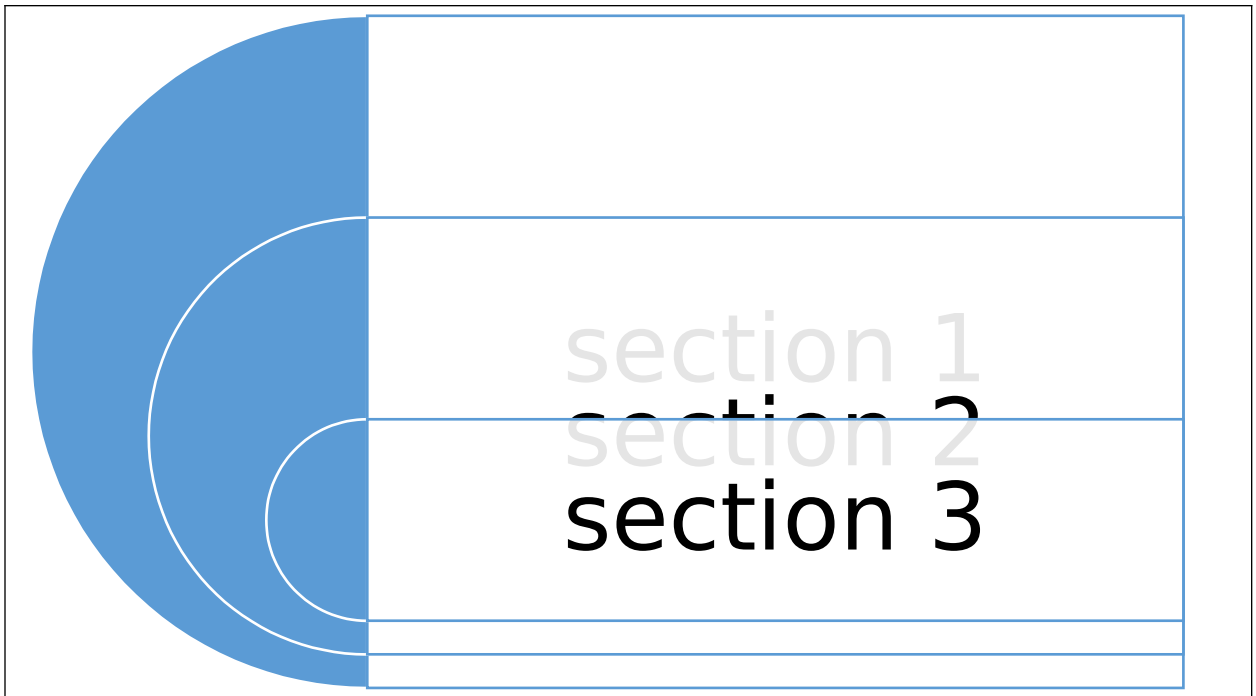
section 4
section 3


section 1
section 2
section 3

```
file:///C:/Users/Library%20SIX/Desktop/UserForm12%20tshingombe.frm
VERSION 5.00
Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} UserForm12
   Caption         =   "UserForm12"
   ClientHeight    =   7164
   ClientLeft      =   108
   ClientTop       =   456
   ClientWidth     =   16356
   OleObjectBlob   =   "UserForm12 tshingombe.frx":0000
   StartUpPosition =   1  'CenterOwner
End
Attribute VB_Name = "UserForm12"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
Private Sub Frame3_Click()

End Sub

Private Sub Label1_Click()

End Sub

Private Sub Label10_Click()

End Sub

Private Sub Label12_Click()
```

```
End Sub

Private Sub Label13_Click()

End Sub

Private Sub Label15_Click()

End Sub

Private Sub Label6_Click()

End Sub

Private Sub Label7_Click()

End Sub

Private Sub Label9_Click()

End Sub

Private Sub ListBox1_Click()

End Sub

Private Sub ListBox3_Click()

End Sub

Private Sub ListBox4_Click()

End Sub

Private Sub MultiPage1_Change()

End Sub

Private Sub TextBox1_Change()

End Sub

Private Sub UserForm_Click()

End Sub
```

---

file:///C:/Users/Library%20SIX/Desktop/UserForm1%20tshingombe%20equation.frm

```
VERSION 5.00
Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} UserForm1
   Caption         =   "UserForm1"
   ClientHeight    =   6840
   ClientLeft      =   108
```

```
   ClientTop       =   456
   ClientWidth     =   19248
   OleObjectBlob   =   "UserForm1 tshingombe equation.frx":0000
   StartUpPosition =   1  'CenterOwner
   WhatsThisButton =   -1  'True
   WhatsThisHelp   =   -1  'True
End
Attribute VB_Name = "UserForm1"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False

Private Sub CommandButton1_Click()

End Sub

Private Sub CommandButton2_Click()

End Sub

Private Sub CommandButton3_Click()

End Sub

Private Sub Frame1_Click()

End Sub

Private Sub Label1_Click()

End Sub

Private Sub Label3_Click()

End Sub

Private Sub Label5_Click()

End Sub

Private Sub TextBox1_Change()

End Sub

Private Sub TextBox2_Change()

End Sub

Private Sub TextBox3_Change()

End Sub

Private Sub TextBox4_AfterUpdate()
```

```
End Sub

Private Sub TextBox4_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean,
ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal
DragState As MSForms.fmDragState, ByVal Effect As MSForms.ReturnEffect, ByVal
Shift As Integer)

End Sub

Private Sub TextBox4_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean,
ByVal Action As MSForms.fmAction, ByVal Data As MSForms.DataObject, ByVal X
As Single, ByVal Y As Single, ByVal Effect As MSForms.ReturnEffect, ByVal
Shift As Integer)

End Sub

Private Sub TextBox4_BeforeUpdate(ByVal Cancel As MSForms.ReturnBoolean)

End Sub

Private Sub TextBox4_Change()

End Sub

Private Sub TextBox4_DblClick(ByVal Cancel As MSForms.ReturnBoolean)

End Sub

Private Sub TextBox4_DropButtonClick()

End Sub

Private Sub TextBox4_Enter()

End Sub

Private Sub TextBox4_Exit(ByVal Cancel As MSForms.ReturnBoolean)

End Sub

Private Sub TextBox4_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal
Shift As Integer)

End Sub

Private Sub TextBox4_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)

End Sub

Private Sub TextBox4_KeyUp(ByVal KeyCode As MSForms.ReturnInteger, ByVal
Shift As Integer)

End Sub
```

```
Private Sub TextBox4_MouseDown(ByVal Button As Integer, ByVal Shift As
Integer, ByVal X As Single, ByVal Y As Single)

End Sub

Private Sub TextBox4_MouseMove(ByVal Button As Integer, ByVal Shift As
Integer, ByVal X As Single, ByVal Y As Single)

End Sub

Private Sub TextBox4_MouseUp(ByVal Button As Integer, ByVal Shift As Integer,
ByVal X As Single, ByVal Y As Single)

End Sub

Private Sub UserForm_Click()

End Sub
```

```
VERSION 5.00
Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} frm1
   Caption         =   "UserForm1"
   ClientHeight    =   8664
   ClientLeft      =   108
   ClientTop       =   456
   ClientWidth     =   19884
   OleObjectBlob   =   "frm1tshingombe.frx":0000
   StartUpPosition =   1  'CenterOwner
   WhatsThisButton =   -1  'True
   WhatsThisHelp   =   -1  'True
End
Attribute VB_Name = "frm1"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
Private Sub ComboBox1_Change()

End Sub

Private Sub ComboBox2_Change()

End Sub

Private Sub ComboBox3_Change()

End Sub

Private Sub ComboBox4_Change()

End Sub

Private Sub ComboBox5_Change()

End Sub
```

```
Private Sub CommandButton1_Click()

End Sub

Private Sub CommandButton2_Click()

End Sub

Private Sub CommandButton3_Click()

End Sub

Private Sub Frame1_Click()

End Sub

Private Sub Label1_Click()

End Sub

Private Sub Label2_Click()

End Sub

Private Sub Label3_Click()

End Sub

Private Sub Label5_Click()

End Sub

Private Sub Label6_Click()

End Sub

Private Sub TextBox1_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean,
ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal
DragState As MSForms.fmDragState, ByVal Effect As MSForms.ReturnEffect, ByVal
Shift As Integer)

End Sub

Private Sub TextBox1_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean,
ByVal Action As MSForms.fmAction, ByVal Data As MSForms.DataObject, ByVal X
As Single, ByVal Y As Single, ByVal Effect As MSForms.ReturnEffect, ByVal
Shift As Integer)

End Sub

Private Sub TextBox1_Change()

End Sub

Private Sub TextBox1_DblClick(ByVal Cancel As MSForms.ReturnBoolean)
```

```
End Sub

Private Sub TextBox1_DropButtonClick()

End Sub

Private Sub TextBox1_Enter()

End Sub

Private Sub TextBox1_Error(ByVal Number As Integer, ByVal Description As
MSForms.ReturnString, ByVal SCode As Long, ByVal Source As String, ByVal
HelpFile As String, ByVal HelpContext As Long, ByVal CancelDisplay As
MSForms.ReturnBoolean)

End Sub

Private Sub TextBox1_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal
Shift As Integer)

End Sub

Private Sub TextBox1_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)

End Sub

Private Sub TextBox1_KeyUp(ByVal KeyCode As MSForms.ReturnInteger, ByVal
Shift As Integer)

End Sub

Private Sub TextBox1_MouseDown(ByVal Button As Integer, ByVal Shift As
Integer, ByVal X As Single, ByVal Y As Single)

End Sub

Private Sub TextBox1_MouseMove(ByVal Button As Integer, ByVal Shift As
Integer, ByVal X As Single, ByVal Y As Single)

End Sub

Private Sub TextBox1_MouseUp(ByVal Button As Integer, ByVal Shift As Integer,
ByVal X As Single, ByVal Y As Single)

End Sub
```

---

file:///C:/Users/Library%20SIX/Desktop/frm1tshingombe.frm

```
VERSION 5.00
Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} frm1
   Caption         =   "UserForm1"
   ClientHeight    =   8664
   ClientLeft      =   108
   ClientTop       =   456
   ClientWidth     =   19884
```

```
   OleObjectBlob   =   "frm1tshingombe.frx":0000
   StartUpPosition =   1  'CenterOwner
   WhatsThisButton =   -1  'True
   WhatsThisHelp   =   -1  'True
End
Attribute VB_Name = "frm1"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
Private Sub ComboBox1_Change()

End Sub

Private Sub ComboBox2_Change()

End Sub

Private Sub ComboBox3_Change()

End Sub

Private Sub ComboBox4_Change()

End Sub

Private Sub ComboBox5_Change()

End Sub

Private Sub CommandButton1_Click()

End Sub

Private Sub CommandButton2_Click()

End Sub

Private Sub CommandButton3_Click()

End Sub

Private Sub Frame1_Click()

End Sub

Private Sub Label1_Click()

End Sub

Private Sub Label2_Click()

End Sub

Private Sub Label3_Click()
```

```
End Sub

Private Sub Label5_Click()

End Sub

Private Sub Label6_Click()

End Sub

Private Sub TextBox1_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean,
ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal
DragState As MSForms.fmDragState, ByVal Effect As MSForms.ReturnEffect, ByVal
Shift As Integer)

End Sub

Private Sub TextBox1_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean,
ByVal Action As MSForms.fmAction, ByVal Data As MSForms.DataObject, ByVal X
As Single, ByVal Y As Single, ByVal Effect As MSForms.ReturnEffect, ByVal
Shift As Integer)

End Sub

Private Sub TextBox1_Change()

End Sub

Private Sub TextBox1_DblClick(ByVal Cancel As MSForms.ReturnBoolean)

End Sub

Private Sub TextBox1_DropButtonClick()

End Sub

Private Sub TextBox1_Enter()

End Sub

Private Sub TextBox1_Error(ByVal Number As Integer, ByVal Description As
MSForms.ReturnString, ByVal SCode As Long, ByVal Source As String, ByVal
HelpFile As String, ByVal HelpContext As Long, ByVal CancelDisplay As
MSForms.ReturnBoolean)

End Sub

Private Sub TextBox1_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal
Shift As Integer)

End Sub

Private Sub TextBox1_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)
```

```
End Sub

Private Sub TextBox1_KeyUp(ByVal KeyCode As MSForms.ReturnInteger, ByVal
Shift As Integer)

End Sub

Private Sub TextBox1_MouseDown(ByVal Button As Integer, ByVal Shift As
Integer, ByVal X As Single, ByVal Y As Single)

End Sub

Private Sub TextBox1_MouseMove(ByVal Button As Integer, ByVal Shift As
Integer, ByVal X As Single, ByVal Y As Single)

End Sub

Private Sub TextBox1_MouseUp(ByVal Button As Integer, ByVal Shift As Integer,
ByVal X As Single, ByVal Y As Single)

End Sub
```

---

file:///C:/Users/Library%20SIX/Desktop/UserForm3tshingombe.frm

```
VERSION 5.00
Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} UserForm3
   Caption         =   "UserForm3"
   ClientHeight    =   7476
   ClientLeft      =   108
   ClientTop       =   456
   ClientWidth     =   19812
   OleObjectBlob   =   "UserForm3tshingombe.frx":0000
   StartUpPosition =   3  'Windows Default
   WhatsThisButton =   -1  'True
   WhatsThisHelp   =   -1  'True
End
Attribute VB_Name = "UserForm3"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False

Private Sub ComboBox1_Change()

End Sub

Private Sub CommandButton1_Click()

End Sub

Private Sub CommandButton2_Click()

End Sub

Private Sub CommandButton3_Click()
```

```
End Sub

Private Sub Label1_Click()

End Sub

Private Sub ListBox1_Click()

End Sub

Private Sub SpinButton1_AfterUpdate()

End Sub

Private Sub SpinButton1_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean,
ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal
DragState As MSForms.fmDragState, ByVal Effect As MSForms.ReturnEffect, ByVal
Shift As Integer)

End Sub

Private Sub SpinButton1_BeforeUpdate(ByVal Cancel As MSForms.ReturnBoolean)

End Sub

Private Sub SpinButton1_Change()

End Sub

Private Sub SpinButton1_Enter()

End Sub

Private Sub SpinButton1_Exit(ByVal Cancel As MSForms.ReturnBoolean)

End Sub

Private Sub SpinButton1_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)

End Sub

Private Sub SpinButton1_KeyUp(ByVal KeyCode As MSForms.ReturnInteger, ByVal
Shift As Integer)

End Sub

Private Sub SpinButton1_SpinDown()

End Sub
```

---

file:///C:/Users/Library%20SIX/Desktop/UserForm3tshingombe.frm

```
VERSION 5.00
Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} UserForm3
   Caption         =   "UserForm3"
   ClientHeight    =   7476
```

```
   ClientLeft      =   108
   ClientTop       =   456
   ClientWidth     =   19812
   OleObjectBlob   =   "UserForm3tshingombe.frx":0000
   StartUpPosition =   3  'Windows Default
   WhatsThisButton =   -1  'True
   WhatsThisHelp   =   -1  'True
End
Attribute VB_Name = "UserForm3"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False

Private Sub ComboBox1_Change()

End Sub

Private Sub CommandButton1_Click()

End Sub

Private Sub CommandButton2_Click()

End Sub

Private Sub CommandButton3_Click()

End Sub

Private Sub Label1_Click()

End Sub

Private Sub ListBox1_Click()

End Sub

Private Sub SpinButton1_AfterUpdate()

End Sub

Private Sub SpinButton1_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean,
ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal
DragState As MSForms.fmDragState, ByVal Effect As MSForms.ReturnEffect, ByVal
Shift As Integer)

End Sub

Private Sub SpinButton1_BeforeUpdate(ByVal Cancel As MSForms.ReturnBoolean)

End Sub

Private Sub SpinButton1_Change()
```

```
End Sub

Private Sub SpinButton1_Enter()

End Sub

Private Sub SpinButton1_Exit(ByVal Cancel As MSForms.ReturnBoolean)

End Sub

Private Sub SpinButton1_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)

End Sub

Private Sub SpinButton1_KeyUp(ByVal KeyCode As MSForms.ReturnInteger, ByVal
Shift As Integer)

End Sub

Private Sub SpinButton1_SpinDown()

End Sub
```

---

file:///C:/Users/Library%20SIX/Desktop/UserForm8%20tshingmbe.frm

```
VERSION 5.00
Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} UserForm8
   Caption         =   "UserForm8"
   ClientHeight    =   7908
   ClientLeft      =   108
   ClientTop       =   456
   ClientWidth     =   19488
   OleObjectBlob   =   "UserForm8 tshingmbe.frx":0000
   StartUpPosition =   1  'CenterOwner
End
Attribute VB_Name = "UserForm8"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
```

---

file:///C:/Users/Library%20SIX/Desktop/UserForm9%20tshingombe.frm

```
VERSION 5.00
Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} UserForm5
   Caption         =   "UserForm5"
   ClientHeight    =   10020
   ClientLeft      =   108
   ClientTop       =   456
   ClientWidth     =   19728
   OleObjectBlob   =   "UserForm5tshingombe.frx":0000
   StartUpPosition =   1  'CenterOwner
   WhatsThisButton =   -1  'True
   WhatsThisHelp   =   -1  'True
End
Attribute VB_Name = "UserForm5"
Attribute VB_GlobalNameSpace = False
```

```
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
Private Sub ComboBox1_Change()

End Sub

Private Sub UserForm_Activate()

End Sub

Private Sub UserForm_AddControl(ByVal Control As MSForms.Control)

End Sub

Private Sub UserForm_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean,
ByVal Control As MSForms.Control, ByVal Action As MSForms.fmAction, ByVal
Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal
Effect As MSForms.ReturnEffect, ByVal Shift As Integer)

End Sub

Private Sub UserForm_Click()

End Sub

Private Sub UserForm_Error(ByVal Number As Integer, ByVal Description As
MSForms.ReturnString, ByVal SCode As Long, ByVal Source As String, ByVal
HelpFile As String, ByVal HelpContext As Long, ByVal CancelDisplay As
MSForms.ReturnBoolean)

End Sub

Private Sub UserForm_Initialize()

End Sub

Private Sub UserForm_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal
Shift As Integer)

End Sub

Private Sub UserForm_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)

End Sub

Private Sub UserForm_MouseDown(ByVal Button As Integer, ByVal Shift As
Integer, ByVal X As Single, ByVal Y As Single)

End Sub

Private Sub UserForm_MouseUp(ByVal Button As Integer, ByVal Shift As Integer,
ByVal X As Single, ByVal Y As Single)

End Sub
```

```
Private Sub UserForm_RemoveControl(ByVal Control As MSForms.Control)

End Sub

Private Sub UserForm_Resize()

End Sub

Private Sub UserForm_Terminate()

End Sub
```

---

frm1 - 1

```
Private Sub ComboBox1_Change()
End Sub
Private Sub ComboBox2_Change()
End Sub
Private Sub ComboBox3_Change()
End Sub
Private Sub ComboBox4_Change()
End Sub
Private Sub ComboBox5_Change()
End Sub
Private Sub CommandButton1_Click()
End Sub
Private Sub CommandButton2_Click()
End Sub
Private Sub CommandButton3_Click()
End Sub
Private Sub Frame1_Click()
End Sub
Private Sub Label1_Click()
End Sub
Private Sub Label2_Click()
End Sub
Private Sub Label3_Click()
End Sub
Private Sub Label5_Click()
End Sub
Private Sub Label6_Click()
End Sub
Private Sub TextBox1_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean, ByVal Data
As MSForms.DataO
bject, ByVal X As Single, ByVal Y As Single, ByVal DragState As MSForms.fmDragState, ByVal
Effect As M
SForms.ReturnEffect, ByVal Shift As Integer)
End Sub
Private Sub TextBox1_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean, ByVal
Action As MSForms.
fmAction, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal
Effect As MSFo
rms.ReturnEffect, ByVal Shift As Integer)
End Sub
Private Sub TextBox1_Change()
End Sub
```

```
Private Sub TextBox1_DblClick(ByVal Cancel As MSForms.ReturnBoolean)frm1 - 2
End Sub
Private Sub TextBox1_DropButtonClick()
End Sub
Private Sub TextBox1_Enter()
End Sub
Private Sub TextBox1_Error(ByVal Number As Integer, ByVal Description As
MSForms.ReturnString, ByVal S
Code As Long, ByVal Source As String, ByVal HelpFile As String, ByVal HelpContext As Long,
ByVal Cance
lDisplay As MSForms.ReturnBoolean)
End Sub
Private Sub TextBox1_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As
Integer)
End Sub
Private Sub TextBox1_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)
End Sub
Private Sub TextBox1_KeyUp(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As
Integer)
End Sub
Private Sub TextBox1_MouseDown(ByVal Button As Integer, ByVal Shift As Integer, ByVal X
As Single, ByV
al Y As Single)
End Sub
Private Sub TextBox1_MouseMove(ByVal Button As Integer, ByVal Shift As Integer, ByVal X
As Single, ByV
al Y As Single)
End Sub
Private Sub TextBox1_MouseUp(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As
Single, ByVal
Y As Single)
End SubUserForm1 - 1
Private Sub CommandButton1_Click()
End Sub
Private Sub CommandButton2_Click()
End Sub
Private Sub CommandButton3_Click()
End Sub
Private Sub Frame1_Click()
End Sub
Private Sub Label1_Click()
End Sub
Private Sub Label3_Click()
End Sub
Private Sub Label5_Click()
End Sub
Private Sub TextBox1_Change()
End Sub
Private Sub TextBox2_Change()
End Sub
Private Sub TextBox3_Change()
End Sub
Private Sub TextBox4_AfterUpdate()
End Sub
```

```
Private Sub TextBox4_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean, ByVal Data
As MSForms.DataO
bject, ByVal X As Single, ByVal Y As Single, ByVal DragState As MSForms.fmDragState, ByVal
Effect As M
SForms.ReturnEffect, ByVal Shift As Integer)
End Sub
Private Sub TextBox4_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean, ByVal
Action As MSForms.
fmAction, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal
Effect As MSFo
rms.ReturnEffect, ByVal Shift As Integer)
End Sub
Private Sub TextBox4_BeforeUpdate(ByVal Cancel As MSForms.ReturnBoolean)
End Sub
Private Sub TextBox4_Change()
End Sub
Private Sub TextBox4_DblClick(ByVal Cancel As MSForms.ReturnBoolean)
End Sub
Private Sub TextBox4_DropButtonClick()
End SubUserForm1 - 2
Private Sub TextBox4_Enter()
End Sub
Private Sub TextBox4_Exit(ByVal Cancel As MSForms.ReturnBoolean)
End Sub
Private Sub TextBox4_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As
Integer)
End Sub
Private Sub TextBox4_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)
End Sub
Private Sub TextBox4_KeyUp(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As
Integer)
End Sub
Private Sub TextBox4_MouseDown(ByVal Button As Integer, ByVal Shift As Integer, ByVal X
As Single, ByV
al Y As Single)
End Sub
Private Sub TextBox4_MouseMove(ByVal Button As Integer, ByVal Shift As Integer, ByVal X
As Single, ByV
al Y As Single)
End Sub
Private Sub TextBox4_MouseUp(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As
Single, ByVal
Y As Single)
End Sub
Private Sub UserForm_Click()
End SubUserForm3 - 1
Private Sub ComboBox1_Change()
End Sub
Private Sub CommandButton1_Click()
End Sub
Private Sub CommandButton2_Click()
End Sub
Private Sub CommandButton3_Click()
End Sub
Private Sub Label1_Click()
```

```
End Sub
Private Sub ListBox1_Click()
End Sub
Private Sub SpinButton1_AfterUpdate()
End Sub
Private Sub SpinButton1_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean, ByVal
Data As MSForms.Da
taObject, ByVal X As Single, ByVal Y As Single, ByVal DragState As MSForms.fmDragState,
ByVal Effect A
s MSForms.ReturnEffect, ByVal Shift As Integer)
End Sub
Private Sub SpinButton1_BeforeUpdate(ByVal Cancel As MSForms.ReturnBoolean)
End Sub
Private Sub SpinButton1_Change()
End Sub
Private Sub SpinButton1_Enter()
End Sub
Private Sub SpinButton1_Exit(ByVal Cancel As MSForms.ReturnBoolean)
End Sub
Private Sub SpinButton1_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)
End Sub
Private Sub SpinButton1_KeyUp(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As
Integer)
End Sub
Private Sub SpinButton1_SpinDown()
End SubUserForm5 - 1
Private Sub ComboBox1_Change()
End Sub
Private Sub UserForm_Activate()
End Sub
Private Sub UserForm_AddControl(ByVal Control As MSForms.Control)
End Sub
Private Sub UserForm_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean, ByVal
Control As MSForms
.Control, ByVal Action As MSForms.fmAction, ByVal Data As MSForms.DataObject, ByVal X As
Single, ByVal
Y As Single, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)
End Sub
Private Sub UserForm_Click()
End Sub
Private Sub UserForm_Error(ByVal Number As Integer, ByVal Description As
MSForms.ReturnString, ByVal S
Code As Long, ByVal Source As String, ByVal HelpFile As String, ByVal HelpContext As Long,
ByVal Cance
lDisplay As MSForms.ReturnBoolean)
End Sub
Private Sub UserForm_Initialize()
End Sub
Private Sub UserForm_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As
Integer)
End Sub
Private Sub UserForm_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)
End Sub
Private Sub UserForm_MouseDown(ByVal Button As Integer, ByVal Shift As Integer, ByVal X
As Single, ByV
```

```
al Y As Single)
End Sub
Private Sub UserForm_MouseUp(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As
Single, ByVal
Y As Single)
End Sub
Private Sub UserForm_RemoveControl(ByVal Control As MSForms.Control)
End Sub
Private Sub UserForm_Resize()
End Sub
Private Sub UserForm_Terminate()
End SubUserForm7 - 1
Private Sub ComboBox1_Change()
End Sub
Private Sub ComboBox2_Change()
End Sub
Private Sub CommandButton1_Click()
End Sub
Private Sub CommandButton2_Click()
End Sub
Private Sub CommandButton3_Click()
End Sub
Private Sub CommandButton5_Click()
End Sub
Private Sub CommandButton6_Click()
End Sub
Private Sub CommandButton8_Click()
End Sub
Private Sub CommandButton9_Click()
End Sub
Private Sub Label1_Click()
End Sub
Private Sub Label2_Click()
End Sub
Private Sub Label3_Click()
End Sub
Private Sub Label5_Click()
End Sub
Private Sub ListBox1_Click()
End Sub
Private Sub ScrollBar1_Change()
End Sub
Private Sub UserForm_Activate()
End Sub
Private Sub UserForm_Click()
End SubNewMacros - 1
Sub fgm()
'
' fgm Macro
'
'
End Sub
```

```
UserForm11 - 1
Private Sub Label6_Click()
```

End Submarketing research ,scope definition plan
define research objective
define research requirement
determine , selection criteria
development vendor criteria , development statemt
evaluate proposal, develom
CommandButton7
owner
days
start
end
Frame1project name
Label5

UserForm12 - 1

```
Private Sub Frame3_Click()

End Sub

Private Sub Label1_Click()

End Sub

Private Sub Label10_Click()

End Sub

Private Sub Label12_Click()

End Sub

Private Sub Label13_Click()

End Sub

Private Sub Label15_Click()

End Sub

Private Sub Label6_Click()

End Sub

Private Sub Label7_Click()

End Sub

Private Sub Label9_Click()

End Sub

Private Sub ListBox1_Click()

End Sub

Private Sub ListBox3_Click()

End Sub

Private Sub ListBox4_Click()

End Sub
```

Private Sub MultiPage1_Change()

End Sub

Private Sub TextBox1_Change()

End Sub

Private Sub UserForm_Click()

End Subbook

production

schedule

chapiter 1

chapiter 2

chapiter 3

Lchapiter 4

chapiter 5

working day budjet

technial review

content review

graphic

draft

layout

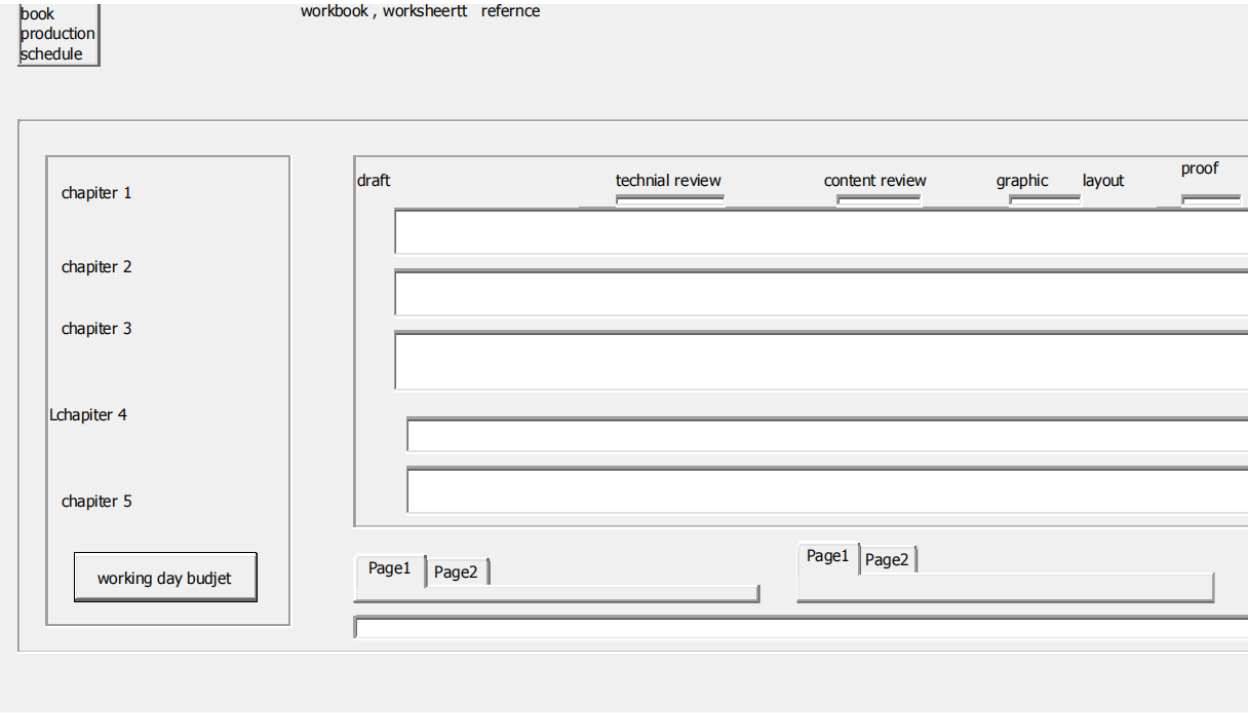
proof

Page1

Page2

Page1 Page2

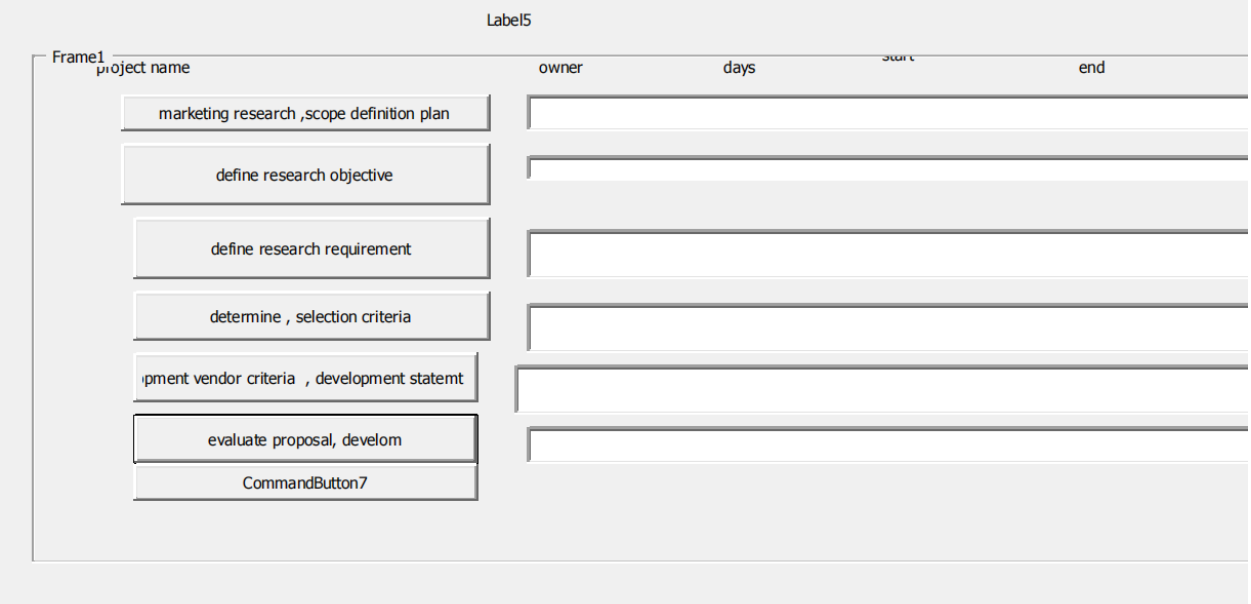
workbook , worksheertt reference



UserForm9 - 1

Private Sub ComboBox2_Change()
End Submark citation
deveoping nation
next citation
mark
mark all
CommandButton4
Frame1
OptionButton1

UserForm11 - 1
Private Sub Label6_Click()
End Sub



UserForm12 - 1

```
Private Sub Frame3_Click()
End Sub
Private Sub Label1_Click()
End Sub
Private Sub Label10_Click()
End Sub
Private Sub Label12_Click()
End Sub
Private Sub Label13_Click()
End Sub
Private Sub Label15_Click()
End Sub
Private Sub Label6_Click()
End Sub
Private Sub Label7_Click()
End Sub
Private Sub Label9_Click()
End Sub
Private Sub ListBox1_Click()
End Sub
Private Sub ListBox3_Click()
End Sub
Private Sub ListBox4_Click()
End Sub
Private Sub MultiPage1_Change()
End Sub
Private Sub TextBox1_Change()
End Sub
Private Sub UserForm_Click()
End Sub
```

Label1 frm 4

forgot

" text forgot "

Frame1
search
author
title
years
city
Lpublished
C

Frame1
search
author
title
years
city
Lpublished
C

file:///C:/Users/Library%20SIX/Desktop/EXCELL%20UserForm3%20TSHINGOMBE.frm

file:///C:/Users/Library%20SIX/Desktop/EXCELL%20UserForm1TSHIN.frm%20FORM.pdf%202.pdf34.frm

```
VERSION 5.00
Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} UserForm3
   Caption         =   "UserForm3"
   ClientHeight    =   6864
   ClientLeft      =   108
   ClientTop       =   456
   ClientWidth     =   16140
   OleObjectBlob   =   "EXCELL UserForm3 TSHINGOMBE.frx":0000
   StartUpPosition =   1  'CenterOwner
End
Attribute VB_Name = "UserForm3"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
```

```
VERSION 5.00
Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} UserForm3
   Caption         =   "UserForm3"
   ClientHeight    =   6864
   ClientLeft      =   108
   ClientTop       =   456
   ClientWidth     =   16140
   OleObjectBlob   =   "EXCELL UserForm1TSHIN.frm FORM.pdf 2.pdf34.frx":0000
   StartUpPosition =   1  'CenterOwner
   WhatsThisButton =   -1  'True
   WhatsThisHelp   =   -1  'True
End
Attribute VB_Name = "UserForm3"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
VERSION 5.00
Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} UserForm3
   Caption         =   "UserForm3"
   ClientHeight    =   6864
   ClientLeft      =   108
   ClientTop       =   456
   ClientWidth     =   16140
   OleObjectBlob   =   "EXCELL UserForm1TSHIN.frm FORM.pdf 2.pdf34.frx":0000
   StartUpPosition =   1  'CenterOwner
   WhatsThisButton =   -1  'True
   WhatsThisHelp   =   -1  'True
End
```

```
Attribute VB_Name = "UserForm3"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
```

file:///C:/Users/Library%20SIX/Desktop/EXCELL%20UserForm1TSHIN.frm%20FORM.pdf3.frm

file:///C:/Users/Library%20SIX/Desktop/UserForm8%20tshingmbe.frm

```
VERSION 5.00
Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} UserForm8
   Caption         =   "UserForm8"
   ClientHeight    =   7908
   ClientLeft      =   108
   ClientTop       =   456
   ClientWidth     =   19488
   OleObjectBlob   =   "UserForm8 tshingmbe.frx":0000
   StartUpPosition =   1  'CenterOwner
End
Attribute VB_Name = "UserForm8"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
```

```
  ClientHeight    =   10020
   ClientLeft      =   108
   ClientTop       =   456
   ClientWidth     =   19728
   OleObjectBlob   =   "UserForm5tshingombe.frx":0000
   StartUpPosition =   1  'CenterOwner
   WhatsThisButton =   -1  'True
   WhatsThisHelp   =   -1  'True
End
Attribute VB_Name = "UserForm5"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
Private Sub ComboBox1_Change()

End Sub

Private Sub UserForm_Activate()

End Sub

Private Sub UserForm_AddControl(ByVal Control As MSForms.Control)

End Sub

Private Sub UserForm_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean,
ByVal Control As MSForms.Control, ByVal Action As MSForms.fmAction, ByVal
Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal
Effect As MSForms.ReturnEffect, ByVal Shift As Integer)

End Sub

Private Sub UserForm_Click()

End Sub

Private Sub UserForm_Error(ByVal Number As Integer, ByVal Description As
MSForms.ReturnString, ByVal SCode As Long, ByVal Source As String, ByVal
HelpFile As String, ByVal HelpContext As Long, ByVal CancelDisplay As
MSForms.ReturnBoolean)

End Sub

Private Sub UserForm_Initialize()

End Sub

Private Sub UserForm_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal
Shift As Integer)

End Sub

Private Sub UserForm_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)
```

```
End Sub

Private Sub UserForm_MouseDown(ByVal Button As Integer, ByVal Shift As
Integer, ByVal X As Single, ByVal Y As Single)

End Sub

Private Sub UserForm_MouseUp(ByVal Button As Integer, ByVal Shift As Integer,
ByVal X As Single, ByVal Y As Single)

End Sub

Private Sub UserForm_RemoveControl(ByVal Control As MSForms.Control)

End Sub

Private Sub UserForm_Resize()

End Sub

Private Sub UserForm_Terminate()

End Sub
```

INSTALLER FILE PRACTICE ,HARD CORRECT ,LICENCE AGREEMENT,CD DRIVER,

MINIMUM SYSTEM REQUIREMENT

INSTALLATION PROGRAMS REQUIUREMENT

MS OFFICE WORD

MS OFFICE EXCEL

MS OFFIE POWER POINT

MS OFFICE OUTLOOK

MS OFFICE ACCESS

500 MEGAHERTZ (MHZ)

256 MEGABYTES (MB) RAM

CD OR DVD DRIVE

2 GIGABYTES , AVAILABLE HARD

MONITOR ,800X600 SCREEN RESOLUTION

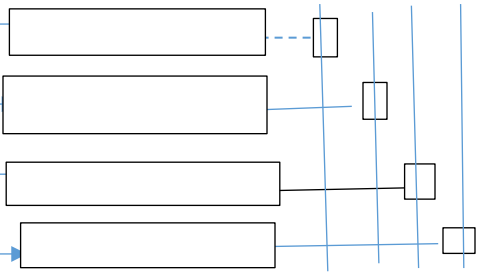
KEYBOARD AND MOUSE OR COMPATIBLE

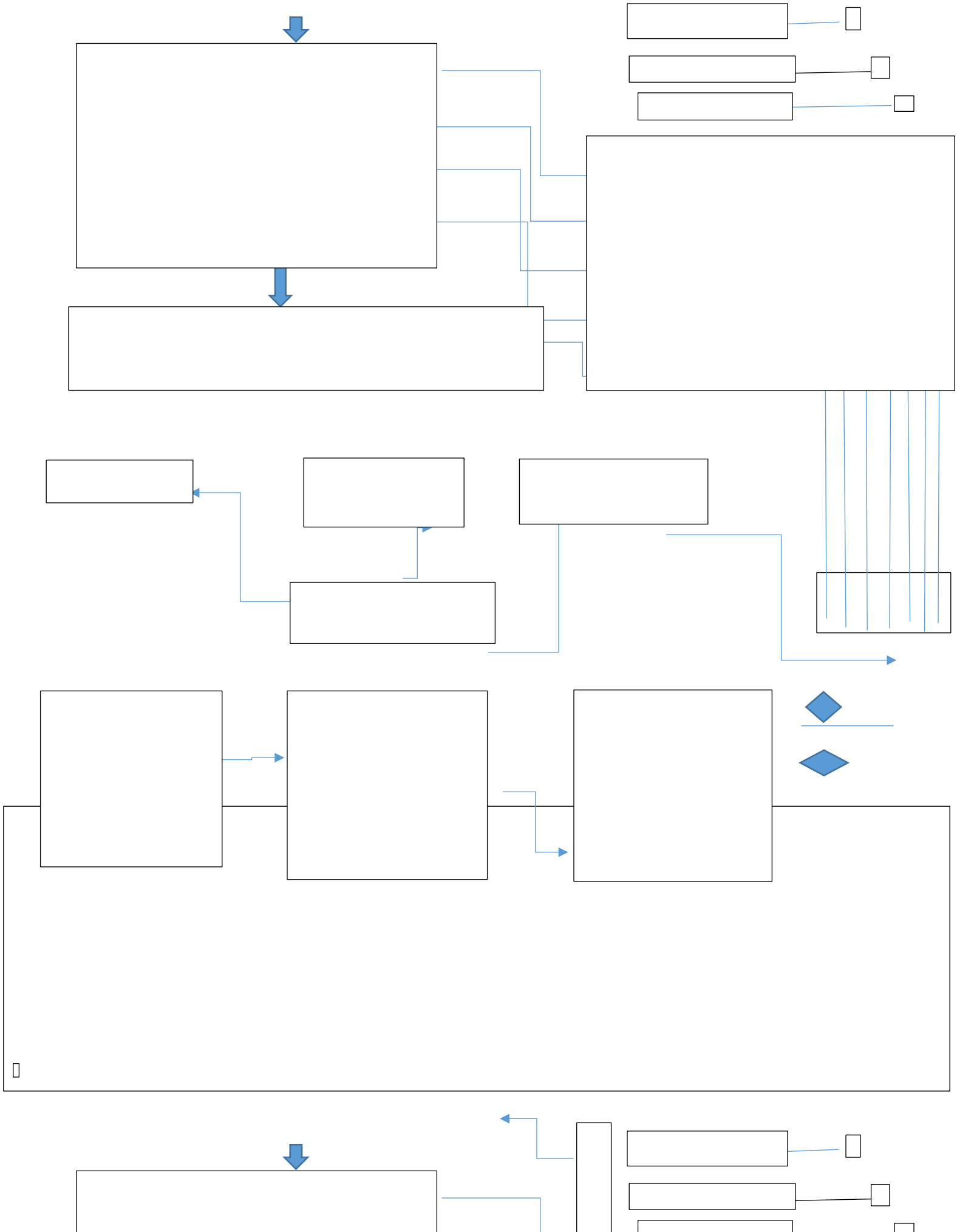
INTERNET AND CONNECTION ,128

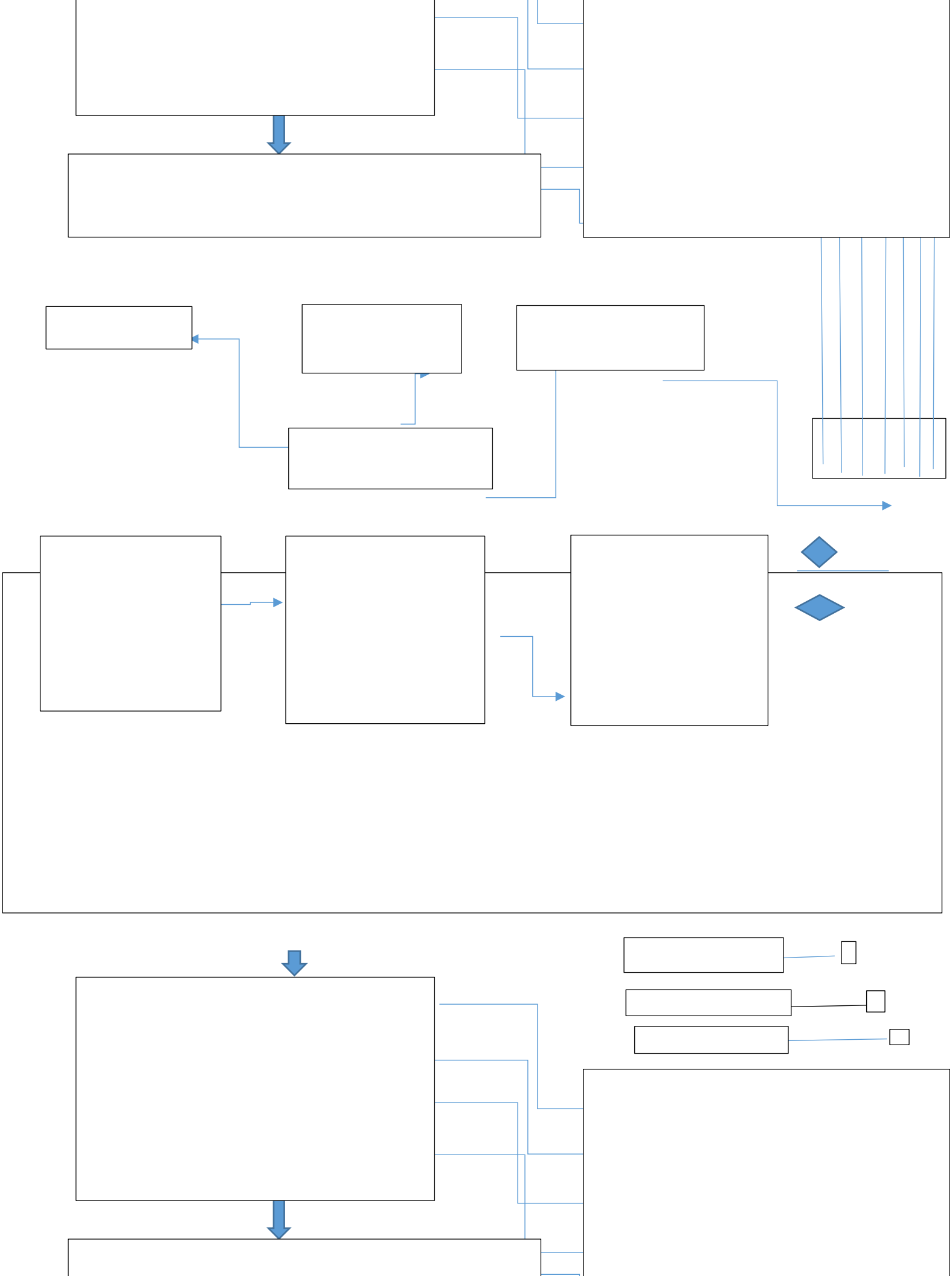
WINDOWS VISTA OR LATER

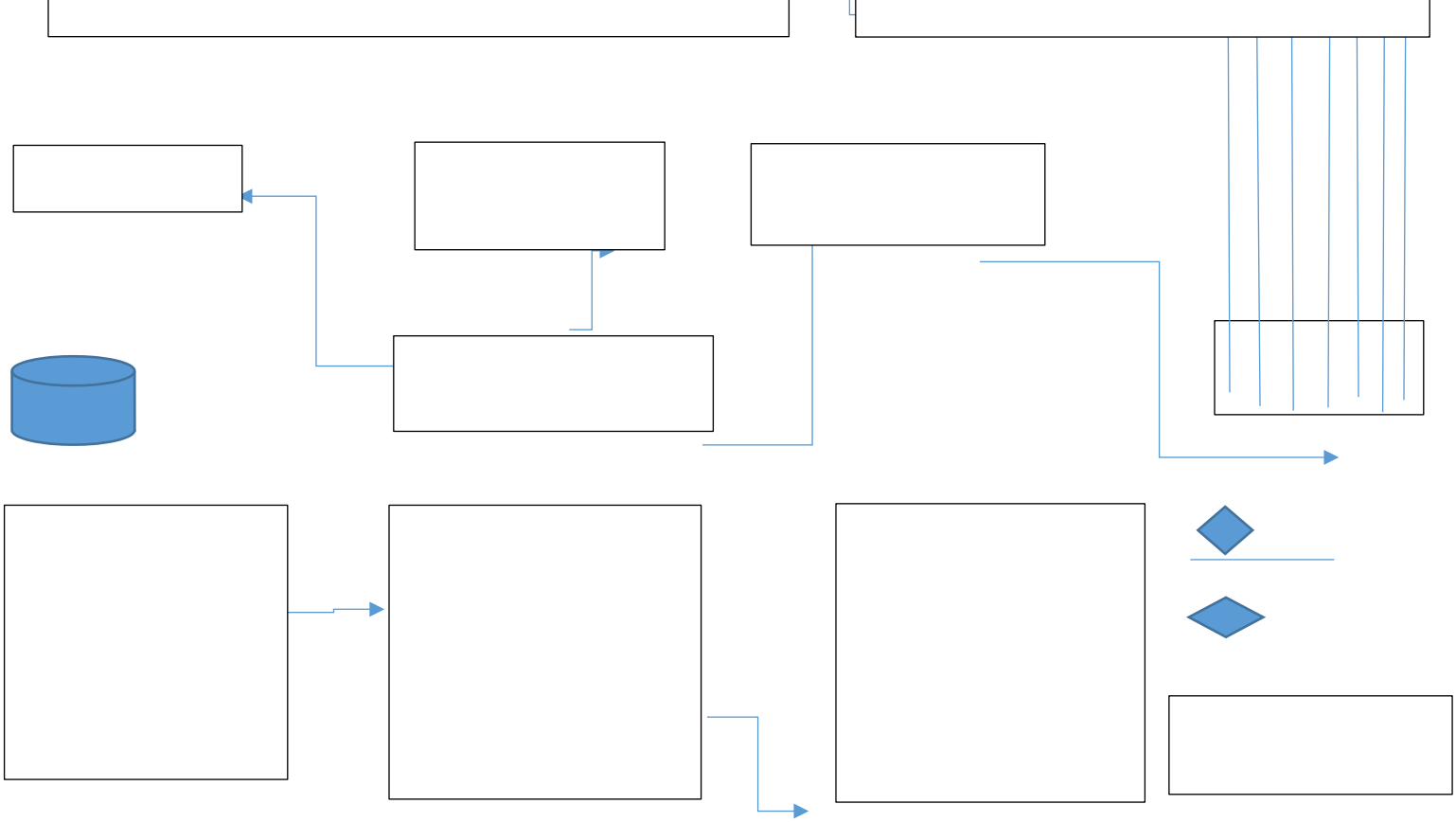
WORD 2007, HARDWARE SOFTWARE

ACESS TO PRINTER









Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Colu11
CHARGE	CURRENT	QUATITY AH		VOLTAGE	VOLT AMP		WATH	COS	KWH

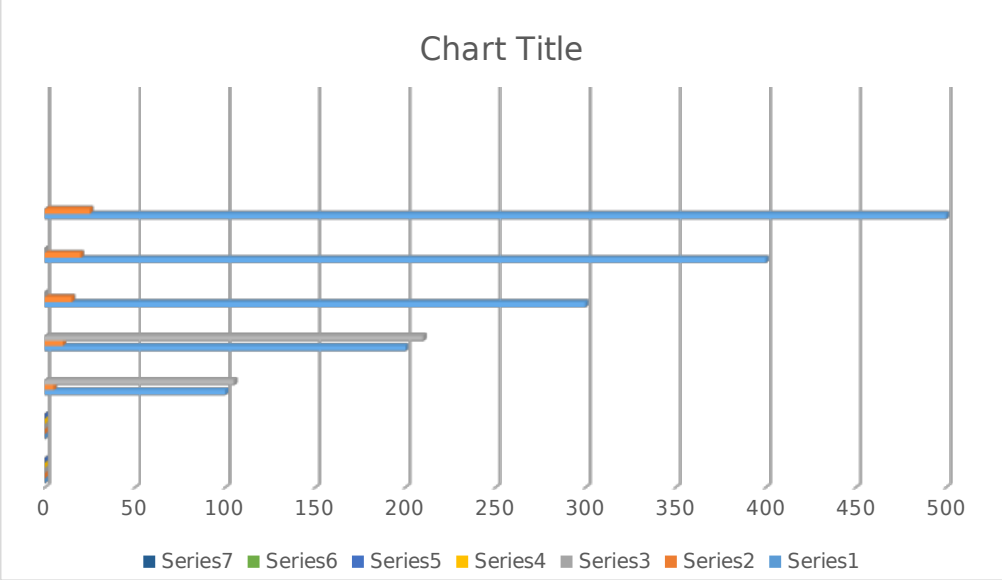
Column1	Column2	Column3	Column4	Column5	Column6
GHZ	BIT GI HERTZ		OCTAL	PIXEL	

MARK

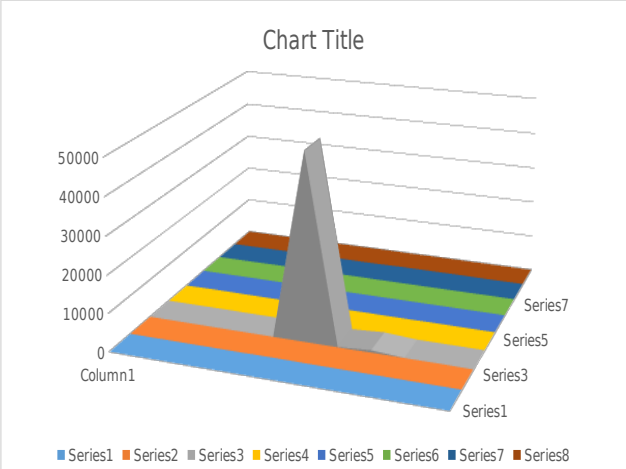
0

Column1	Column2	Column3	Column4	Column5
QUATITY	PRICE EACH	SUBTOTAL	DISCOUNT	TOTAL
100	5	105		
200	10	210		
300	15	)		
400	20	)		
500	25			

#VALUE!

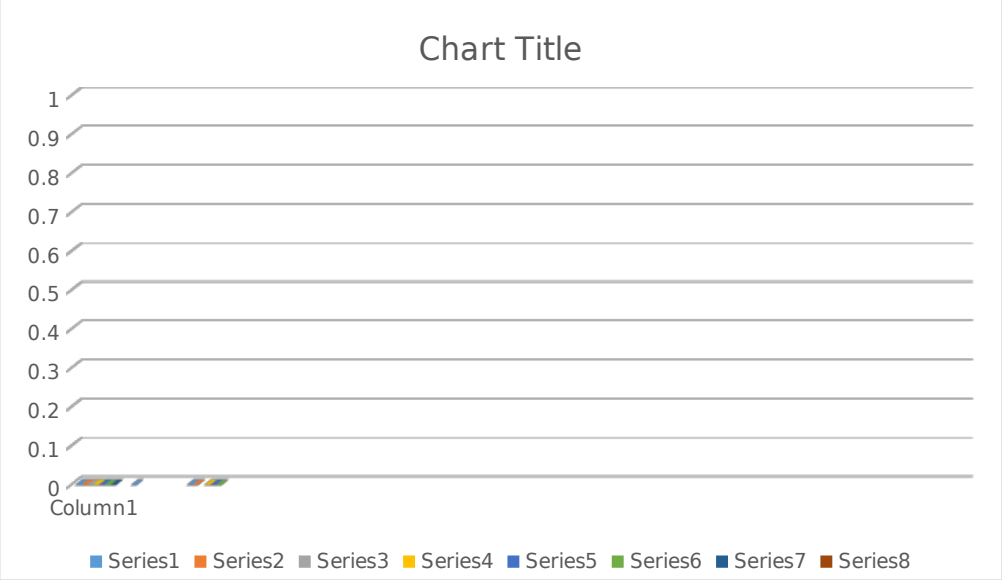


Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8
	NAME MANAGER						
	NAME MANAGER		VALUE	REFERS TO	SCOPE	COMMENT	
	INTEREST		10%		WORKBOOK	ANNUAL INTERST RATE	
	LOAN AMOUNT		50000		WORKBOOK	INTIAL AMOUNT	
	MONTH		120		WORKBOOK		
	PAYMENT		660		WORKBOOK		

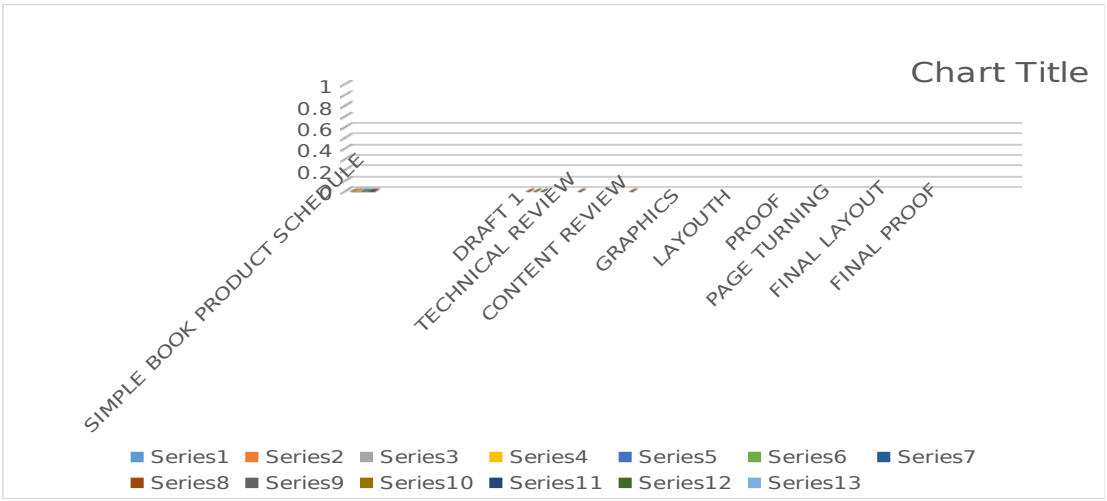


0

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8
	OUTLINE DATA						
	DAYS WITH A	DAYS WAS GOOD		MAXIMUN	90 TH PERCENTILE	MEDIAN	
Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8



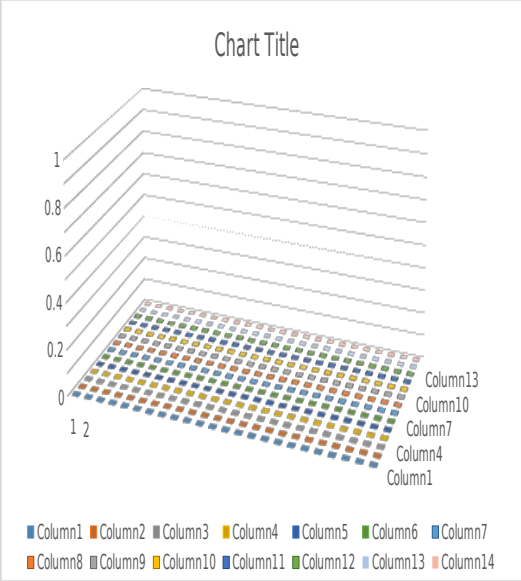
ORDR	CUSTOMER	ORDER	SHIPPED DATA	FREIGTH	SHIP NAME



Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8
N71F69A60:N70	WORKSHET REFERENCE						
	SIMPLE BOOK PRODUCT SCHEDULE			DRAFT 1	TECHNICAL REVIEW	CONTENT REVIEW	GRAPHICS
	START DATE						
	WORKIG DAYS BUDGET						
	CHAPTER1						
	CHAPTER1						
	CHAPTER1						
	CHAPTER1						
	CHAPTER1			WORKDAYS	WORK DAYS	0	
				WORKDAYS			
				WORKDAYS			

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8
#NAME?	Column2	Column3	Column4	Column5	Column6	Column7	Column8
N71F69A60:N70	WORKSHET REFERENCE						
	SIMPLE BOOK PRODUCT			DRAFT 1	TECHNICAL	CONTENT	GRAPHI

	SCHEDULE		REVIEW	REVIEW	CS
	START DATE				
	WORKIG DAYS BUDGET				
	CHAPTER1				
	CHAPTER1				
	CHAPTER1				
	CHAPTER1				
	CHAPTER1	WORKDAYS	WORK DAYS		0
		WORKDAYS			
		WORKDAYS			
	TABBLE ANALYSER WIZARD				
	ORIIGINAL PRODUCT				

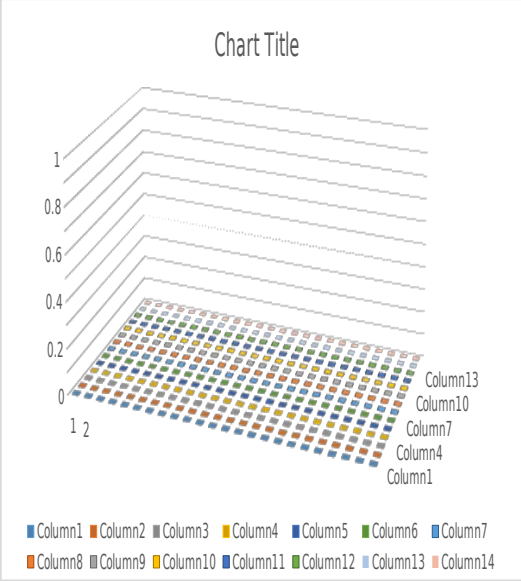


Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Col 10
PRODUCT ID		UNITY PRICE			VALUE OF INVENTORY UNITS STOCK				FIEL
PRODUCT ID									TAB
COUNT		AV			SUM				TOT
									SOR
									SHO
									CRIT
									OR

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Col 10

FIST NAME	LAST NAME	PHONE NUMBER	CITY	FIELD
CUSTOMERS	CUSTOMERS	CUSTOMER	CUSTOMERS	TABLE
				SORT
ORDER ID	CUSTOMER ID	EMPLOYEER ID	ORDER DATE	
ORDERS	ORDERS	ORDERS	ORDERS	

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10
REPORT HEADER CUSTOMES									
CUSTOMERS ID			FIRST NAME		LAST NAME		AD		



MACRO RECORD VIEW

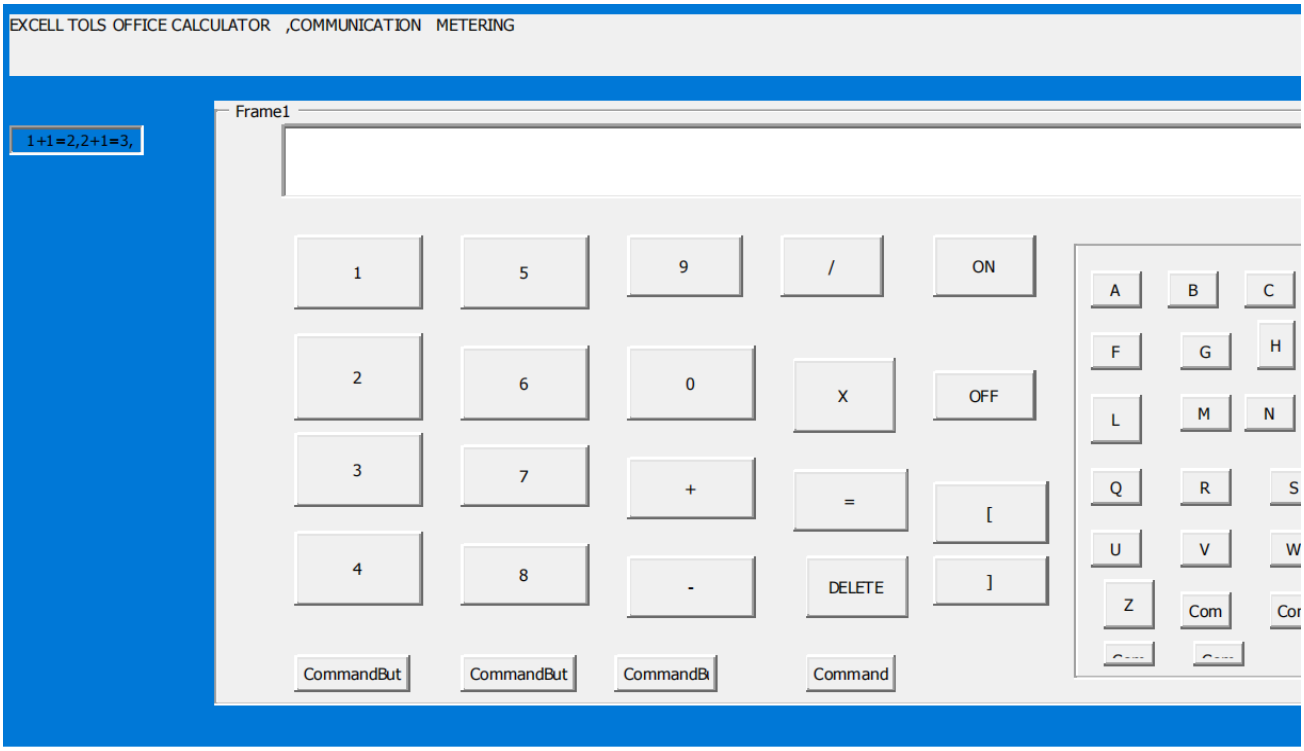
UserForm1 - 1

```
Private Sub Label1_Click()
End Sub
Private Sub Label10_Click()
End Sub
Private Sub Label13_Click()
End Sub
Private Sub Label17_Click()
End Sub
Private Sub Label20_Click()
```

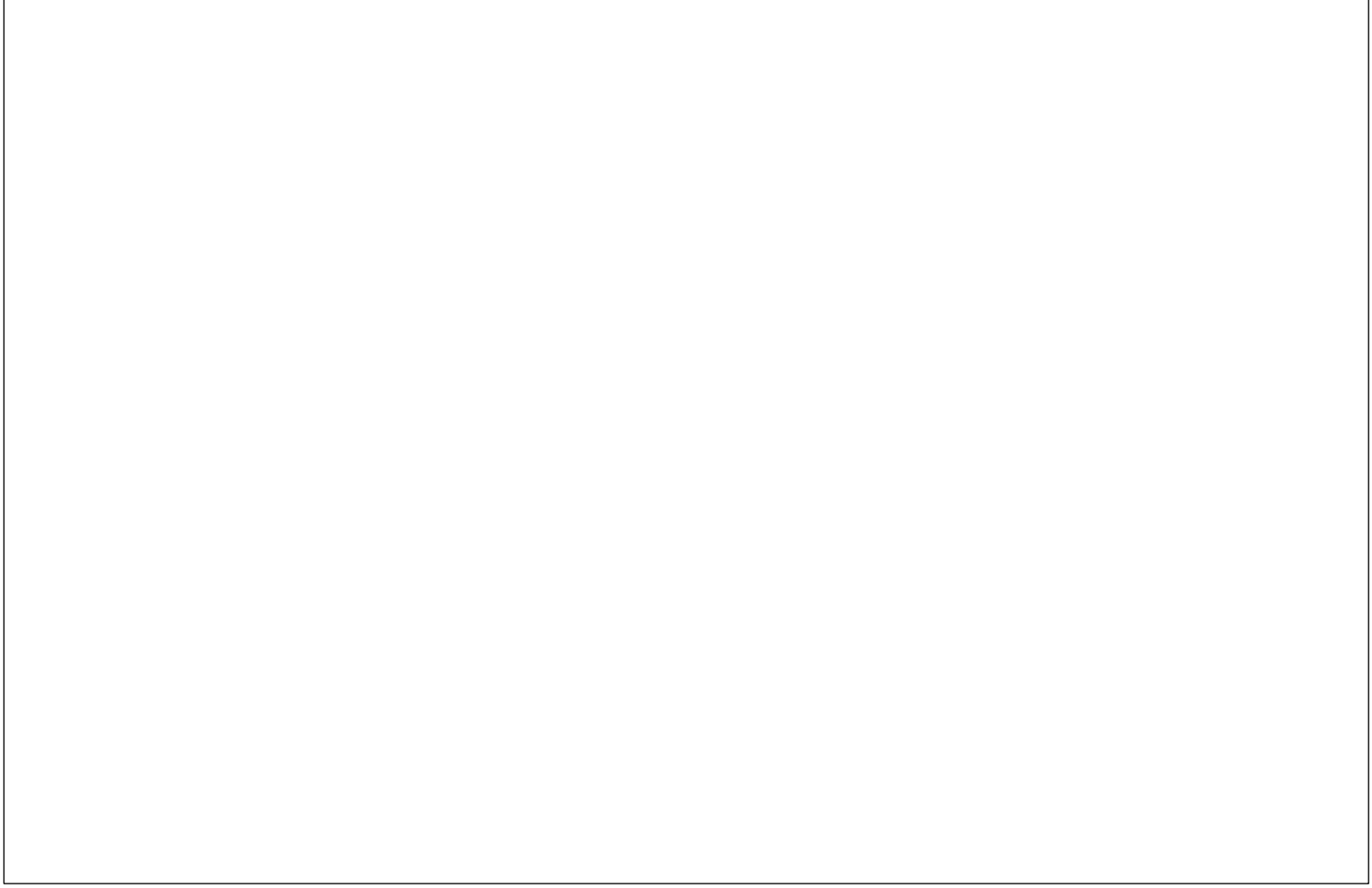
```
End Sub
Private Sub Label25_Click()
End Sub
Private Sub Label7_Click()
End Sub
Private Sub Label8_Click()
End Sub
Private Sub TextBox10_Change()
End Sub
Private Sub TextBox12_Change()
End Sub
Private Sub TextBox19_Change()
End Sub
Private Sub TextBox4_Change()
End Sub
Private Sub TextBox6_Change()
End Sub
Private Sub TextBox8_Change()
End Sub
Private Sub TextBox9_Change()
End Sub
Private Sub TextBox9_DblClick(ByVal Cancel As MSForms.ReturnBoolean)
End Sub
Private Sub TextBox9_DropButtonClick()
End Sub
Private Sub TextBox9_Error(ByVal Number As Integer, ByVal Description As
MSForms.ReturnString, ByVal S
Code As Long, ByVal Source As String, ByVal HelpFile As String, ByVal HelpContext As Long,
ByVal Cance
lDisplay As MSForms.ReturnBoolean)
End SubUserForm1 - 2
Private Sub TextBox9_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As
Integer)
End Sub
Private Sub TextBox9_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)
End Sub
Private Sub TextBox9_MouseDown(ByVal Button As Integer, ByVal Shift As Integer, ByVal X
As Single, ByV
al Y As Single)
End SubUserForm2 - 1
Private Sub CommandButton69_Click()
End Sub
Private Sub CommandButton7_Click()
End Sub
Private Sub CommandButton70_Click()
End Sub
Private Sub CommandButton8_Click()
End Sub
Private Sub CommandButton9_Click()
End Sub
Private Sub Frame1_Click()
End Sub
Private Sub Frame2_Click()
End Sub
Private Sub Frame3_Click()
```

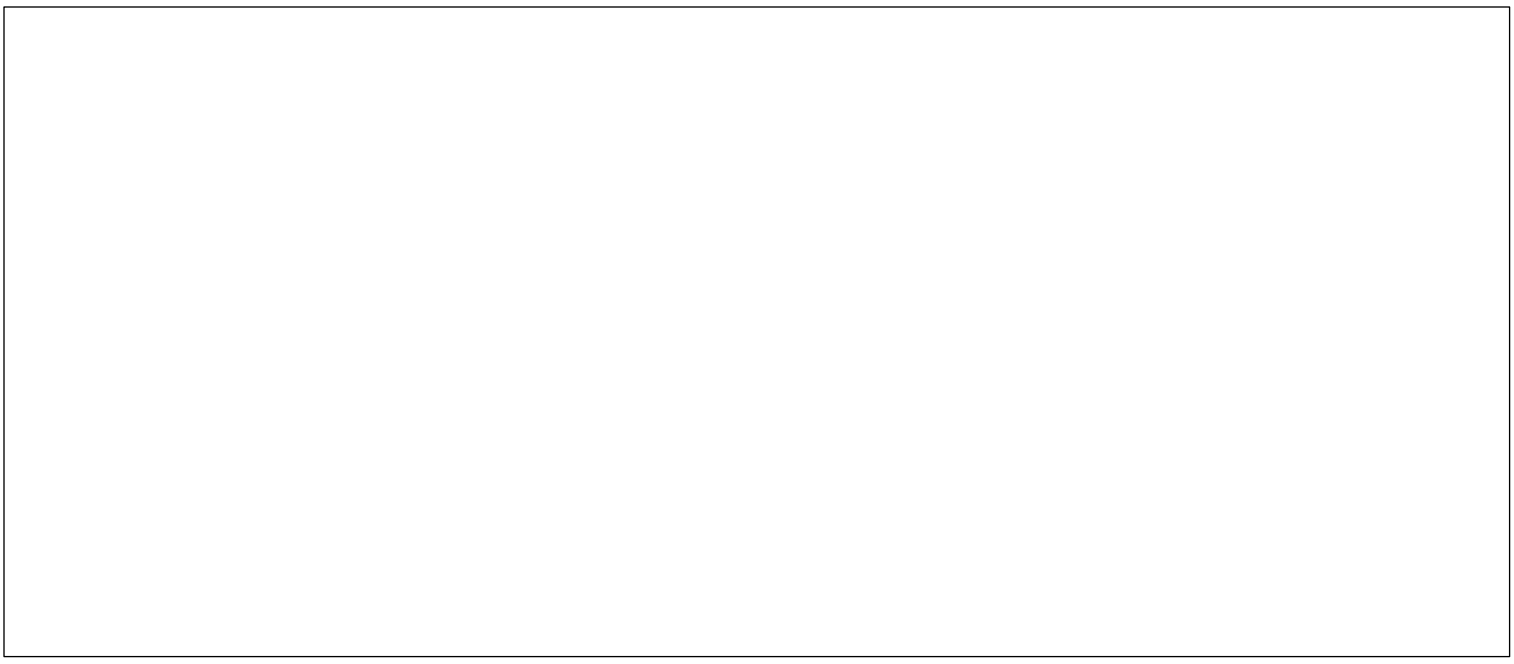
```
End Sub
Private Sub Label1_Click()
End Sub
Private Sub TextBox1_Change()
End Sub
Private Sub TextBox2_Change()
End Sub
Private Sub UserForm_Click()
End SubModule1 - 1
Sub Macro1()
'
' Macro1 Macro
' ENGINEER
'
'
Range("I15").Select
Application.Goto Reference:="Macro1"
ActiveWorkbook.Save UserForm2 - 1

Private Sub CommandButton69_Click()
End Sub
Private Sub CommandButton7_Click()
End Sub
Private Sub CommandButton70_Click()
End Sub
Private Sub CommandButton8_Click()
End Sub
Private Sub CommandButton9_Click()
End Sub
Private Sub Frame1_Click()
End Sub
Private Sub Frame2_Click()
End Sub
Private Sub Frame3_Click()
End Sub
Private Sub Label1_Click()
End Sub
Private Sub TextBox1_Change()
End Sub
Private Sub TextBox2_Change()
End Sub
Private Sub UserForm_Click()
End Sub1
2
3
4
5
6
7
8
9
0
+
-
/
X
=
DELETE
ON
```

OFF
[
]
A
B
C
F
G
H
L
Q
U
M
N
R
S
V
W
Z
Com
Comm
Com
Com
CommandBut
CommandBut
CommandBu
Command
Frame1
EXCELL TOLS OFFICE CALCULATOR ,COMMUNICATION METERING
1+1=2,2+1=3,
End Sub




```
VERSION 5.00
Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} UserForm1
   Caption         =   "UserForm1"
   ClientHeight    =   9024
   ClientLeft      =   108
   ClientTop       =   456
   ClientWidth     =   19812
   OleObjectBlob   =   "EXCELL UserForm1TSHIN.frm FORM.pdf MATERIAL
INSTALLER.pdf 2 CALCULAR HARDWARE.pdf, POWER  ...frx":0000
   StartUpPosition =   3  'Windows Default
   WhatsThisButton =   -1  'True
   WhatsThisHelp   =   -1  'True
End
Attribute VB_Name = "UserForm1"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
```





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Experiemental orientation guide workbase Manuel construction guidelines:

- electrical engineering

Electrician

Design. ,,

Z×A×U= .

ΔU.2L××Pxz×Z×A

..**schema electrical / drawing design

 panel

_____&

Courent I1,I 2..

S= porter in cm ,a = distance in cm

P= U× I.[W].IP.U

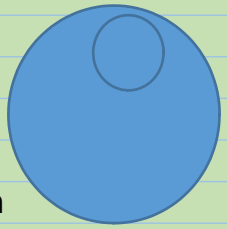
P=U×I×cos .flux ..IP × U× cos alph

P= 3×I×I×cos [W] IP×3×U×cos flux

F2, 0,2×I@×2×s,a

=.....(N)

F3=0,808×F2[N]



F3=0,865×F2[N]
F3=0,865×F2[N]
-resistancd of conductor,L= ligth of conductor ,m aluminy,
- Z = conductivity, m /mm ion ,
A = across area conductor ,mm Sq..
- resistance = of coiling of induction condensator , L = inductance ,H ,f = frequency ,Hz ,
- series parallel installation ,
U=I×R[V].I.U..R=, R.I..ohmm × 33 m ,ohm m× 8,3 mm Sq × ohm
XL= 2×π×f×L, XC ,,2× π×f×c
{
=
ZR2(XL-XC)2=+ZR,,cos = --- ohm

RG, R1R2/R1+R2=..
R1R2×R×./ ..
Z..Z.@..Z2..=, X..X..

1***4.1.2.5***1**..**Cable and conductor : value short circuit current ,,assignment current ,,
Transformation
- system design of cable conductor:
Cable PVC,0,75 mm , souple,H05V - K ,0,75 black ,,big cable coutchouc ,3 conductor = 2,
- protection , green yellow , symbol h ,supply voltage ,300/ 300v,03,,$00/500,450/750v
Material insulation cable : caoutchouc naturej styrene ,butadiene silicon material,PVC ,st
- construction specialist cable : meplat with conductor separe H,NHL ,,cable plastic gain ,
- characteristics of materials : polythylene ,elastic ,thermoplastic ,color ,grid degree Up ,s

Fuse motor tree phase value rotor squire ,(DIN VDE 0636,,
Control thermic ,,start delta over load max start ,2 × assignt current , max 5 sec ,, regula
Switch ,switch gear ,,, close open circuit
Usage current ,
I = courent etablid ,IC = courent coupe,I e = courant assigned d employ ,u tension avan
60847-3(VDE 0660 partie switch for motor starting b,,power cut open close ,L/Rv,ms.

Letter and Laball switch USA ..

S ,switcy combination lock non lokkin, disconnect switch ,drum switch ,flow operated swi

switch ,locking switch,master switch, mushroom head,pressure or vacut,operated switch
switch single throw switch ,speed switch ,temperat actuated , time delay switch ,toggle s
,commutating field compensating ,generator ,motor separately excited ,series field ,shun
Connector,,
- Consol visual ,prodibus , can bopen ethernet commuyaty ,net pin 1, pin
Atex , installation

Command automatics

Installatt port ethernet ,port ethernet prise RJ45,led ,port com
Synopsis cabling system
Logigrame algorithm ,commutator.

_____
1***4.1.2.6.***Overview : research in training and .university and college ,cpd learning
campagnie work base : experiemental.
Module ,construction distribution system design

- describe between fault current peak ,value ,RMS symmetrical value .RMS , asymmetric
I= symmetrical RMS current ,IP = peak current,e= 2,71,wv,= 2.p.f ..
Cycle (ANSI/IEEE.C37.13.2.2015..
-Design a distribution system.
-Developm of a system one - line ..imp, --_Standard drawing , additional d
rawing --schedule and specification
- power systems voltage ,
Voltage classified
- income service Volta,income consider
- type of system:
Power system analyse ,short current wave.
- fault current calculat, fault calculai for specifications,medium voltage ,breaker fault ,mo
Grounding ground fault ,
- typicK power systt generator and generator system ,generator short circuit ,caractt,ger
motor power factor correction ,
- typical applicatt ,health facilities ,quickly generator and load bank ,power quality,
- power quality seism ,ampacities for conductor ,NPA 70-2014,
- safety goal power hazard oashs , NEC

- regulation requ
& Maximum flexibility ,minimum
- maximizing electrical minimy operating : loss conductor transfory .
: discussed further ,
- development phase : input plumbing construction v.
- construcy documents : project ..

- bid .
- project award contractor db panejct.

- single primary feeder loop systeme, primary radial
- duplex fused : switch intelicy..- fused selector switch one .
- soaring transformer substay reijsce ..
System preliminary,factt .
- typical protective relay scheme for small generator , differential reisu .
..
- typical emergency power systems b: ..energy
- maintenance test,
Breakers calculat on a symmetrical current rating : fault calculation : on note interrupted symmetrical .
- 13,8 kV ,,breakers x/R= 15, 375 MVA,transfo 13,8 kV primary ,3750kva , secondary ,4,
On system,13,8 kV system ,3,75 MVA base ,
Z=3.75MVA/375,,= 0,01 Pu or 1%
Z^2=X^2+RR^2=R^2(x^2/R^2+1)
R=Z/√x^2/R^2+1=1/√266=1/15.03=0,066%
X=X/R(R)=15(0,0066)=99%
Transformer standard standard ,5,5% impedance has ,+ 75 manufacture toleri,
Transformer standard ,5,5% impedance ..
From transformer loss per unit percent ,R is calcul .
31,000 watts full load
-6,800 watt no load load

_____
24,209 watt load losses
R= 24,2kw/3750 KVA = 0,0065 Pu or ,0,65%
- transform x = √ z^ 2-R^2.√(5.09)^2-(0,65)^2=√25.9 ^2-0,42=√25,48=5,05%

_____

	X.	R.	X/ R
13,8 kV system	0,98%.	0,066%.	15
Transfo.	5,05%.	0,65%.	8
Systt total.	0,04%.	0,76%.	8

.tree

For three phase ,i3 phase = E/x ,,
X ohm ..
I3 phase = IB/X,, IB is base ,,
- base current IB = 3,75MVA/√3(4,16Kv)=0,52k.A
I3 phase = I1/ x = 0,52 /0,0604=8,6k, sym ,,syst ,x/ R= 9 is less 15
Duty circuit ,is 8,6 ka three phase I and moment ..
8,6× 1,6 = 13,7 KA. I 3
- for line - to grounv fault ,
ILG = 3E/2x1+X0=4IB/2x1+xo ,xo is seauet reactance transformer positive ..
ILG= 3(0,52)/2+0,0604)+(0,0505=9,@KA sym ..
The ,50 vcp ,, applied,z= x ,in= x = 0,52/0,55=9,5ka stm ,
X/ R ration ,15 or less multiot ,10 for short circuit bdury ,short circuit duty is then 8,5 kA

_____
Design distributor system
drawing note / build..

_____
1***.4.1.2.5.***Fault calculation check break application or generator bus for the system gene
transient reactance ,x"d= 11% ,,or x = 0,x= pu ,
Gen ,x/R ratio ,30.

1/X's= 1/x+1/x+1/x== 3and 1/Rs= 1/R+;1/R+1/R=3/R..
X's= x/3and Rs ,= Rs=R/3,, system ,X's/Rs = x/R= gen .x/R=39,, generator neutral groun
I/x+1b/x+31b/x= 3(1,04)/0,1@=28,4 ka ,symetru,E/x Amper ,system ,x/R of I multiple b.
-Three phase symmetrical interri capacity

_____
Breaker type|vmax| max ki| at 4,16 op vo

1.*4.1.2.7.*Overview: trade theory base experiemental.

-basic electricity ,: continuing education professional development course ,

- technical learning college..

Training ,basic electricity course energy and system electricity , system fundamental ma

- electricity

-1. introduction: ,energy foundation ,joules ,

How to generated ,electrical transmission.

-2. simple forms of electricity : static electricity , magnetic and electricity , electromagne

-3.electrical princiy introduction : electric power distribution ,electronic introduction,elect

4.hydraulic analogy principle : hydraulic component equivalent hydraulic equation

Limited to hydraulic analogy .

- electrical low and theory :tangent ,gal ometer , understanding ,Faraday low ,maxset Fa

- classical mechanics , potential difference ,power resistance and current ,power ..

- circuit : coils and capacitor : parralke ,parallel ,resistance ,

- power phases : understanding single ,understand three phase ,phase converted ,AC po

- transformser : transfo efficiency trisgke delta ,polyphase ,3 phase edisub system conne

Electrical motor : motor lubrication, electrical motor introduction ,brushes, AC motor brea
motor ,torque ,stepper rotary ..

_____

Energy introduction : electricity principle charge act ,,

- an electric field a complex simple type electromagnetic field by and electric ,.

- the electrician ,generator devi

- type of transfo,air core for use ,above ,1mhz ,iron core use 100 khz - 1mhz,,iron core fo
secondary,auto transformer ,,set down ,,step up ,, ..primarie in series's for ,239 volt , kub

Wye introduction:

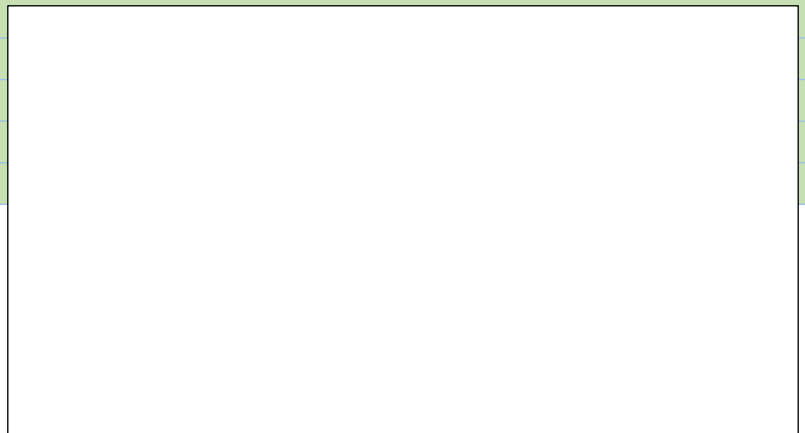
I1= v1/|Ztotal|<(- Teta)

I2=v2/|Ztotal <(-120-teta)

I3=V3/|ztoak|<(129°-0)

Z totaj total = zln + zy ,,z toaj ,,

I1+I2+I3=In=0



Delta = V12= V1-V2=(vln<0°)-(VL
=√3VLN<30°=π3v1<(phase v1+30
V23= v2-v3=(vln<-120°)-(vln<120°)
= √3VLN<-90°=√3v2<(phase v2+39°)
V3.1= v3-v@=(vln<120°)-(vln <0°)
= √ 3vln <150°=√3v3<(phasev3+30°)
.I12=V12/|ZΔ|<(30°-teta)
.I23=v23/|zΔ|<(-90°-teta)
I31=V31/|ZΔ|<(150°-teta)..
Relate ,si I31.
Kck ,node..
I1=I12-I31=I12-I12<120°
=√3.I 12 <(phase ,2 - 30°)= √3I13(-teta)
- I 2 = √ 3.I 23 < (phase i23-39°)=√3.I.23<(-129°-teta)
I3= √3.I 3 < (phase i31-30°)=√3.I31<(120°-teta) ..

_____

Connecting transfo
-vo= vt× np, ,,/ VT ,VT ,,vs = VT × NS.
N..
Vs/ vl = Ts/To =
Vs= vp× secondary turns/primary turns..

_____

-maxwell Faraday equation: z vector ,x vector ,y vector ,, n ,sum ,,integral differential su
- Maxwell Faraday equation ,-v×E= -derive partial .B/ derive partial times.
- v- the curl operator ,E(r,t) is electrical field ,and B (r,t) magnt field generally ,r and tim
- Maxwell Faraday ,four equation fundamental theory classic electromagnetic ,integral fo
Integral countiurn .E× DL= - integration .sum to ..derive partial B./derive partial time × d
Sum is a surface bounded by the closed contour ,sum derive partial ,,
- E is electric field ,B is the magnett field ,
- dk is an infinitesimal vector element of the cotyr ,derive partial ,sum .
- dA is an infinesimal vector element of surface ,sum if it's direction is othogky to the sur
* Hydraulic equation example.
- hydraulic.
Type | hydraulic| electric | thermal | mec
Qty | v/m cubs | q(c). |. Heat Q,j|p,s
Pot| P[Pay=j/m| V=j/c| k=j| v ,m/ s
Flus| m^3/s | A= C/s| A.j/s | force ,F.
Flux | v/ m | C/ m.s = A/ m | Q" ,W/ m
Lin. | π.r.Δp/8.n.l| j=- - .| Q" = k.vt..
Linea model ,poseilk low ,ohm ,,

_____

Understanding voltage introduction:

Δ vba= vb-va= - integral (b) to (do) E vect× DL .vect -(- integral .A to do ,E.dl ..

= Integrally .B to ri ..E .DL + integral.a to ri .

Vec E.dl = integral .A to B .E .vect .DL vect

2.1.38,, 2. Projec13. * Winding on rewinding transformers and machines both DC and the types of machine ,and the desired ,

13.1.* Understanding the types of machines .* DC machines these include DC motor a windings.

- AC machine : these include ,AC motor ,like induction synchronous motor and transformse

-2 key parameters for windings.

a winfmding specifications;

1. Number of turns (N) the number of turns in the winding affect the voltage and current chara

2. Wire gauge : the thickness of the wire affect the resistance and current carrying capacity.

3.* Winding configuration Serie parallels combination depending machine type calculating wing

* For DC machine .

1.calculate the number turns the number of turns can be calculated based on the desired magn Phi\cdot\cdotZ}

-_____

- to calculate aspect related to telephonic cellular telecommunication supply .

- understanding cellular telecommunication supplies cellular telecommunication supply involve communication .

* Base station : equipment that connect mobile devices to the network's.

* Backhaul the connection between base station and the core networks.

* Core network the central par of the telecommunication network that manage data and voice t

,##2* key calculation.

a* coverage area calculation the coverage ,area of cellular tower can estimate using the follow

-\(A\)=coverage area (in square kilometres)

-\(r)=radius of coverage (in kilometres)

Example : if a tower has a coverage radius of ,5 km

\[A=\pi(5^2)\ approx ,,78.54\ text { km } ^2\].

b. Capacity calculation: the capacity of cellular network calculated based on the number of cha [c=\frac{(A^B).}.{B.} \ big / sum ..

_____

* To calculate the component of a cellular telephone system and derive relevant integral, .

1. Components of a cellular telephone system ,

A: cellular telephone system typicay consist of the components.

* Mobile station (ms) * the users device, smart phone tower that communication with mobile c

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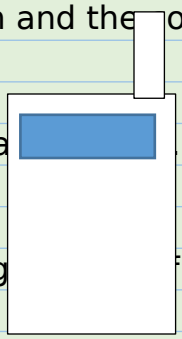
1. Components of a cellular telephone system ,
A: cellular telephone system typicay consist of the components.
* Mobile station (ms) * the users device ,smart phone tower that communication with m
* Mobile switching centre ,MSC , manages the communication base station and the ore
* Core network,handles data routing billing and other ,
,2 calculating key metrics.
a.coverage ,Area calculation the coverage area of a base station be estima

\[A=\pir^2\]
-where .\(A\)= coverage area in square kilometres .
.\(r\)= radius of coverage in kilometres ,ex : if a base station has a coverag ,3
\ [A=\ pi (3^2)\ approx ,28.27\,\text ,{km} ^2\]
.b capacity calculation.

To calculate the spatial transmission characteristics of a system particularly in telecomm
##/ understanding spatial: transmission, spatial transmission refer to how signal private
obstacle ,and the environment.
* Free space path loss (fspl) the loss of signal strength ast travel through free space.
* Multiple path propagation the phenomenon where sign effect : the change in frequency

2 calculating free space path loss (fspl) the free space path loss can be calculated using
\ [text \ text { fspl } = 20\ log - { ,10}{d} 20 log { 10}(f)+32,44\] where : \ d = distance
signal ,in megahertz ,example calculation ,if the distance ,\ d (d) is ,10 Kim and the freq
---
To calculate the properties of material used and conductor insulator and magnetic mater
1. Conductor : are material resistance common conductor..
- resistivity calculation the resistivity,
(\(\ rho}) of conductor is a measure of now strongly it resist the flow of electric current th
(\(R)) Of conductor can ,

}[R=\ rho \ frac { L}{A}\]
.\(R\)= resistance,(ohms) .
.(\rho)= Resistivity (ohm metre)
.(Li)= Length of the conductors meter
./ (A\)= Cross - sectional area ,saaremete
Ex . Calculation for copper wire with a length of ,2 meter and a cross ,section area of \+|\
(Which is / (i\ times ,10 ^{ - 6} , m ^\)) And using the resistivity of copper (\+\ rho \ ap
R= 1.68 } times , 10^
To calculate the size of a winding for stepper motor .

1. Understanding stepper motors.

- a stepper motor is a types of DC motor that decides a full rotation into a number of equ

* Number of phase : most stepper motor are either ,2 phase ,5 phase..

* Number of steps per revolution ,common value are ,200 steps ,(1.8 degree per step or

* Windt configuration the arrangement winding unipolar wire gauge : the thickness of wi

3. Calculating the size of the winding : determine the number of turns s , the number of t

[N= \ frac { v} { L csoti }\ ]

-**14. measure in true.**

***1 types of measure errors measure : systematic these are considering repeata**

*Random error unpredictable and can vary from one measure.

- gross errors : the are large errors that occure to human .

* Calibration of instruments ,calibrat is the process of adjusting instrument to ensure its

1. Select a standard: use a reference standard.

2. Measure with the instrument take measures using the instrument.

3. Compare measurements , compare the instruments .

4. Calculate errors the errors can \[text { text error }= text { measured values \ text { tr

5. Adjust the instrument if system error are found

- to perform conversion between binary hexadec

Conversion between number systeme.

* To convert a binary number to decimal ,use the formuler , \ [\ text { Decima} = sun -{

the position of the difit from the rigth starting at 0 convert ,\ (1011_21) to decimal \ [=

2^1+1\ colot ,2^O= 8+0+2+1=11_{10}\]

-decimal to binary : to convert a decimal number to binary divide the number by ,2 and r

until the Quotient is ,On

Exp : convert \ (1@-{10}\) to binary .

\ [11\div ,2=5\ qual\ text { remainder ,r= \\ ,5 \ div ,2=2\

-to calculate the size of a memory accumulator in a binary system.

1) understanding binary representation:

In a binary system ,data is represented using bits ,binary digital where bit can either 00

2. Memory size calculation : the size a memory accumulator based number of bit it the to

\ [text { number of values } = 2^n\]

Where . \(n\)= numbers of bits.

* Example calculation: determine the size of the accumulation.

2) calculate the number of value ,\[\ text { number of values }= 2^ 8 = 256\]

This mean the accumulator can hold values from \ (01) to (255\)(decimal ,### memory
of the accumulator in bytes is \ [text , { sizer

_____

To calculate thevenin , equivalent of a network ,short circuit current and voltage value ,

1. Thevenin theorem.

* Overview: thevenin theorem state that any linear Electrical net with voltage source and
voltage source (1(V-{the}\)) in series with with a single resistor (\ (R-{ the}\)).

2. Step to find the in equivalent.

a identify the portion of the circuit select the portion the circuit for which

b calculate thevening voltage (\(V - (the }\))

1.open - circuit voltage, calculate the voltage across the terminal where the load was co

-2 method : you voltage division nodal analysing

- calculate thevenin resistance (\(R-{the}\))

- deactivated all independent source : replace independent field.

- to calculate amplification in circuits involving diodes transmission diode transistor ,and

diode amplification diode are typically not used for amplification in the Sens performa
current calculation.

\[I-D= L.S \ left (e^{\ frac { V-D}{ NV - T}} -1 rigth .

. \(1-D\)= diode current (A).

.\(I-S\)= reverse saturation current.

. \(V-D\)= voltage across the diode ,V

.\(n\) = ideality factor (typical between ,1 and ,2

. \ (V-T\)= thermal voltage (\approx 26\ MV) at room .

2. Transistor application transistor can use common collector thermostat common ,is co

1. Voltage gain (\ (A-C\))\[A-V=

_____

To analyse and calculate parameter in a control system we typically focus on aspect suc

''''''

____

2. Basic concepts in controle systeme.

* Open - loop control system : systeme that does not use feedback to determine if it's ou

* Closed loop control system systeme that uses feedback to compare the actual output t

,2 transfer function

The transfer function.

The transfer function \(H(S)\) of a control system relates the output (V(s)\<) to the inpu

3. Stability analysis , to determine the stability of a control system we can use the chara
is obtained by setting the denominator of the transfer function to zero

- for a transfer functions , ,\[H(S)=\ frac {k}{S^2+3S+2}\]

The characteristics equation is .

\[S^2+3s+2=0\] to find the root we can use ,

S=\ frac {-b\ pm \ start ,{ b^ 2-4ac}}{2a}

1. DC machines : speed (n) the speed of DC motor can be calculated using formula \[N=
- where \ (N\ ) = speed in Rpm (revolution perminute .
- \ (N\)= supply voltage (v) ,
-\(i\)= armature current (A)
\ (R\)= armature resistance ,(ohm .
\(K\)= a constant that depends on .
.\(\ Phi\) = flux per pole ,(WB)
b ,torque ,(T) ,the torque procedure
T= k \ CDOT } phi \ CDOT \] ,
Where .
.\(T\)= torque ,(N.m)
\(k\)= A constant that depends .
\(phi\)= flux per pole WB .
\(|\)= armature current .

_____

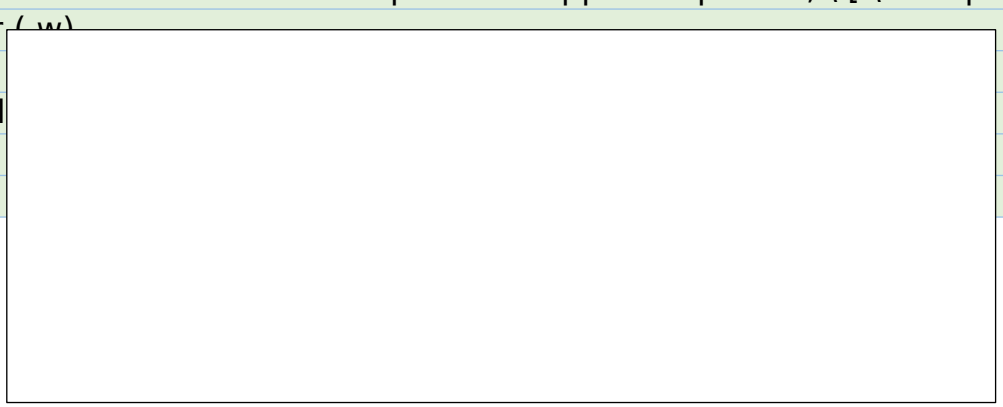
To calculate de gradient of a function and derive the integral of a Senegal,
1. Calculating the gradient of a function
The gradient of a function \(f(x,y)\) is a vector that contains all of its partial derivatives f
\[\ nabka , f=\ ,left(\fract { \ partial f) {\ partial x } , \ frac \ partial f }\ partial y \ right.
f(x,y) = x^2+x^2\]
.step ,1 calculate the partial derivatives.
.\(\ frac {\ partial f}{ \ partial x }=2x \)
.\(\ frac {\ partial f }{\ partial y}= 2y , I)
. Step 2: write the gradient \[\nabla ,f =2x,2y)\]
2. Deriving the integral of a signal ,we typically,use the fundamental theorem of calcul
Is given by : \[\ into$a^ b f(f) \,dt\]
-___
To calculate derivation ,both partial total double ,triple, relate ,to signal detection.
1. Partial derivatives : partial derivatives are used dealing with functionalite of multiple v
\(f(x,y)\) the partial derivatives with respect to \(x\)
Is denoted as \(\ frac{\ partial f }{ partial x}\) and with ,
Respect to \ (y\) as \(\ frac {\ partial f }{\ partial ,y }\)
Examp : \[funct \[f(x,y)=x^2y+3xy^3\]
* Calculate partial derivatives .\(\ frac \ partial f){ partial ,x }= 2xy+3y^2\)
.\(\ fract \ partial ,f }{ partial y }{= x^2+6x6xy\)

* Total derivatives : the total derivatives account how a functionalite change with respec
\(f(x,y)\), the total derivatives \ (DF \) is given by : \[DF = \ frac { \ partial f }{\ partial x
Using the previous : \ [DF = 2xy+ 2y^2)

_____

- to calculate the Laplace and Fourier series Fourier a random vibrational signal ,signal al
1. Fourier series : the Fourier series and cosine function for periodic function \ (ft)\) with
f(t)= a 0+\ sum ${n= 1}{\ infty}
\ left + a_ n \ cos \ left \ left + } frac { 2\ pi not }{T}
\ right) + b _ n \ sunleft (\ track { 2\2 Pu ,not { T}\, \ rigth \ rigth)\]
- pratical exercise related to electrical engineering
Exercises calculate the total resistance in a circuit problem statement have ,3 resistance
Resistor ,R1= 100 ohm resistor ,R2= 20 ohm , resistor ,R3= 309 ohm
Formula for total resistance.
.\[R-{\ text t{ total }}= R1+R2+R3\]
. Substituting the values \[R - { \ text { total }}= 10\.\ text , { ohms }+ 20\, text{ ohms
{ ohm }\]

- to calculate the supply trade theoty impedance and resonance in a electrical circuit ,we
resonance.
1. Impedance ,Z in a RLC circuit the total impedance is combination of resistance ,(R) in
impedance in a series RLC ,circuit is
[Z =\ sqrt{R^ 2+(x-L-X_C)^2}\]
Where _\(x_L= 2\ pi f L \ Pi .f.c\} (capacitive reactance ,
-\(X_C)=\ frac ,{1}{2\ pi.f.c}\}(capacitive reactance.
-|(fl) is the frequency in Hertz (z)
-\(L/) is the inductance in Hertz (Hz) ,
| (L /) Is the inductance in Henry(h)
-\(cl) is the capacitance in farad (f)
2* resonance occurred in an RLC circuit when the inductive reactance equals the capacit
and the formulation for resonance frequency form resonance frequency (\ (f - I)) is \
To the calculate the fundamental system electric power factor we need to understand re
how to define.
1 .real power ,P owner reactive power and apparent power in electrical how to to definiti
2) reactive power ,q the power the oscillator between the source and the load measured
3 ,apparent power ,s the total power in the circuit , measure volt ampere ,Va is the comb
- power factor calculation:
The power factor ,of is defined as the ratio of real power to apparent power , \ [\ text po
Where : .\(P\)= real power (w)
.\(S\\)= apparent power ,(
apparent power calcul



apparent power calculay the apprent power can be calculated using the following form
\[S=\sqt{P^2+Q^2}\]
.value .real power (\(P\))=500w,
.reactive power(\Q\))=300VAR
- calculate apparent power (s)\[,S=\sqt{P^2t
- to calculate the characteristics of AC and DC machine we typically look at paramt such
Characteristics for both type machines .
-where .
|(a-O=| frac {1}{T} int- 0^ f(t)\dt)
.\+a-n = frac {2}{T} int_O^Y f (t) \ cos\ left (\ frac { 2\ Pi .n t}{ t } rigth \, DT have sim

_____

- to calculate the transformation and conservation of signal in the context of electrical sig
1 .signal transformation Fourier transform.
- the Fourier transform is used to convert a time domain signal into it frequency domain
e^{- j \ omega }\ dt\]
- where . \(f+ \ omega)\) = Fourier transform of the signal.
.\(f(t)\= time - domain signal .
.\ (\ omega \) = angular frequency in Radia per second ..\ (j\) = imaginary unit .
BB* Laplace transform
- the la place trans is another transformation used to analyse linear time _ invariant syste
-{O} infty } , f(t) ,, e{-st } St \]
- \(f(s)\)= Laplace transform of the signal .
- \ f(ft c)I)= time domain signal.

_____

- to calculate and understand synchroun and synchronous system, particularly in context
1. Synchronous systems.
- in a coordinated, governed a common clock signal , in electrical synchronise system are
- example : lineare system the state space representatation .
\|[| dot { x}(t}=Ax(t)+By(t)\]\[y(t)=(x(t)+du(t)\]
Where :
-|(x(t)\)= state vector
.|(u(t)\)= Input vector
.\ (y(t) \)= output vector .
.(A\)= System .
.\(B\)= input matrix .
.|(C\) = Output matrix .
.\(D \ ) = feed forward.

_____

2.asynchronous system as asynchronous system operate without a global click signal op
types of digital circuit and communication system .

- example equation for an asynchronous ,for an asynchronous linear systems the state sp

|[| Dot { x} (t}= Ax (t) + B(t) \ ]\[y(t).

_____&

To calculate the integral of an amplified signal , detection of a signal and the probability

Integral of plidie signal

If you have a signal \ f(t)\) that is amplified by a constant factor \(A\) the amplifier signal
time interval \[a,b])\[\ int_ a^baf(t)\, St = A\ into _ a^ b ,f (t) \ St

Exampt say \ f(t) = t ^ 2\) and \(A= 2\) we want to calculate the integral from \ (0\) to \

\[\ into _0^/2t^\, St = 2\ in_ 0^ t^2\,dt\]

Calculating the integral

\[into 0^1t 2^2\,St=\ left[\ fract { t^3}{3}\ rigth]-0^1=\

Frac {1^3}{3}_\ frac { 0^ 3}{3}=\ frac { 1}{3}\}

Thus \[\ into _ 0^ 1 ,2 T ^ 2\,dr..

_____

To calculate or design a program for artificial intelligence ,AL within an operational fram

Program

- 1 define the operational framework : an operational framework for an all program typic

* Objective : clearly defined the purpose of the Al program classification predict optimisa

* Data source : identify the data source requirements for training and testing the Al mod

* Algorithm : choose the appropriate Al algorithm based on the problem type ,supervised

1. Data collection and preprot

Data collection gather data from identified source this could involve wab departing using

* Data cleaning : remove duplicate handle missing value and correct inconsistent in the

* Feature ent : select and transfy relevant feat that will be used in the modej .

3* model development.

* Select model choose the AI model based on the problem type for .

- for classification decision tree random ,forest ,support vector ,machine ,neural networks

-* for regression linear regression polynomial regression neural networks .

- training train model using the data set .

- to calculate a physical chemical plant balance we typically use the principles of mass a
of material and energy systems.structure approach to performing a mass balance physic

2 define system : identify the boundaries of the system your are analizing this could be r

3. Identify input and output : list all the input and output system ,input can include raw n

-

14*. Mass balance equation : the general mass balance equation can expressed as :

\[\ text { input }-\ text { output }+\ { generation } \ text consumption}=\ text { accumu

- for a steady state process (where accumulation is zero the equation simplified to \[\ tex

4.example calculation consider a simple chemical reactions input : A= 100kg / h , B =50

.product..

_____

14.1 to calculate the derivative and integral related an electromechanical systems we ty
describes the dynamic of the system structure approach to derive the master equation a

14.1. master derivatives : electrical derivatives for a simple electrical circuit with an indu
by : \ [V-L { L\ frac {Di}{St}\]

Where \(v-L)= voltage accross the inductor.

.\(|\){ current through the inductor .

- b mechanical derivatives:for a mechanical system the relationship between torque \ (\t

\ you = |/ frac { d\ omega }{ St}\]

- where .\ (\ tau\) = torque.

\ (\\)= moment of inertia

\(\ omega \ ) = angular velocity master

____

14.2 definition: isostatic system a system that hasjus enough support to maintain equilib

- hyperstatic for equilibrium leading to redundancy in constraint.

* Stability : refers to the ability of a system to return to its original state after disturbanc

* Stability analysis: for stability analysis ,we typically use method.

Eingenvalue analysis for a system represented by a matrix the eingenvalue can indicate
lyapunov ,(function \(V(x)\) , such that \(V(X)>0\) and ,,\(\dot{(V)(X)<O\) for stability.

14.4 transformation to linear system to transform a hyperstatic system into a linear syst

_____

14.6 creating a programme for a artificial intelligence ,AI , system that focuses on operat
object design the architecture implementation . Algor designed the architecture impleme

- 1 define objective

- purpose : the AI system should monitoring analyse and Optimizer electric metering ope

14.7.

Key features:.

- real time data collection from electric meter .

- data analysis for consumption patterns.

- anomaly detection for identifying irregularity.

- predictive maintenance for meter reporting and visualisation of data.

_____

14.8. system architecture:.data source electric meter and sensor ,Day ,SQL no sQL) to st
* Processing layer , implement data processing and analysis using AI algorithm.
* User interface development a dashboard for user to visualisation data and insights.
* Data collection / use API ,,direct connection to gather data from electric meters,exampl
* Python,import request,def ,collect meter dentK meter data storage.
- r esponse request get ,(f" http:// API electricity meter comparable ,/ { meter _ I'd "} re

_____

14.9.Creating on expert system for network involved several steps . < Including defining
is a structure approach to developing.

-* define objective :
Purpose .the expert system shouand ld assist in network management troubleshooting a
* Key features: network monitoring and performance analysis troubleshooting and diagn
- recommendations for network configuration.
User friendly interface for networking administratir.
2. System architecture , knowledge base a repository of network knowledge including ru
derive,user interface

- implementation step : knowledge base developm.protocols configuration common issue
-plain text .
If network _speed < threshold
Then
If packet _ loss >
Acceptable _ level then
Recommended _ check _ hardware.
- inference Engine implement the inference Engine to process user queries and apply the
Ex code snippet , python.
Python
Class expert system
Def _ initi_ self
Self . knowledge base
- to analyse a pneumatic hydraulic vibratory system equation governing the system and
1. Understanding the system ,A pneumatic - hydraulic
Vibrator system typically consist of
* Pneumatic components : air driven actuator or cylinder.
* Hydraulic components : fluid driven actuator or cycle

to
16.hydraulic components:fluid driver actuator or cylinder .
* Vibratory mechanism , A system that produces oscillator or vibration, oft used in applic
2 . deriving equation for a pneumatic hydraulic system the dynamic described using New
_1 force balance the net force acting on the system,express as \F-{\text { net }}=F-{\ te
F-{\text { hydraulic }}- , F {\ text { damping }}-F{\ text (inertial }}
2.* Pneumatic force .the force generated by a pneumatic actuator.

_____
To derive the relationship force ,motion. ,power ,energy .
\[F= m\ CDOT a \ ] where.
.\(F\) = force (N) , | \ (m \)= mass (kg) |\(a)= acceleration ,(m/s.s)
* Work done by a force : work (\(w\) is defined as the force applied to an object time dist
Is applied in the direction force .
|[W= F \ CDOT d \ CDOT \ cos(\thita \]
.\(w\)= work ,joule
.\(f\)= force ,N
.(d\)= Distance,m
.\(\ theta \ ) = angle between .

,3 energy :
Kinetic energy ,(k.E) is the energy of an object du it's motion .
\[K.E= \frac {I}{2}.m.V^2\..
Where .
\(V\)= velocity (m/s)..to analizing the concept of magnetic electromagnet and electrodyn

_____
- understanding the concept.
- solenoid ,a coil of wire generate a magnetic field an electrical current pass through it.
* Magnetic moment ,A measure of the strength and director of a magnetic source
* Electromagnetic induction , a measure of the strength and direction of a magnetic sour
* Electromagnetic.iduction .the process by changing magnetic.field induce and electromo
* Electocinectic ; refer to the motion of charged | particle a fluid under the inference of a
-the magnetic moment (\(m\)) of a solenoid, \[m=n\cdot \cdot A \]
Where . \+Cn\)= number of turns per unit length ,turns / m
\(\)= current throughout the solenoid ,A
\(A\) = cross - sectional area of the solenoid,mm. Electromagnetic induction
- according to Faraday los electromagnetic the induce

_____
16.3.The term Quotient intellectual calculus is term in mathematics or intellectual ass.

- intellectual Quotient ,(iQ) ,the ,IQ is a measure of a personal intellectual abilities in rela
- IQ \[\ text {IA}=\ left (\ frac { text { mental age }}{\ text { chronological age }}\ rigth

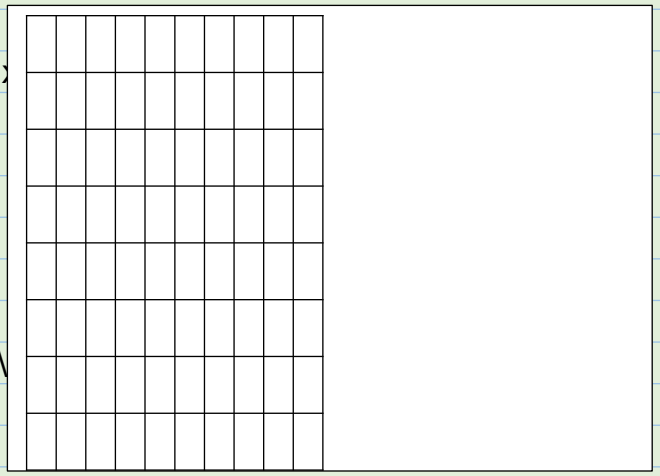
- mental age : the age level at which a person perform intellectual.
- chronological age : the actual >
2.Quotient in calculus.
If you have two function \ (f(x) and \(g(x)\).the quotient \ [A(X)=\ frac {f(x){g(x)}
3.calxukating the derivative of a quotient , [fract = d}{dx{\ left (\ fract { f (x) }{g(x)\ r

_____

- to analyse psychometric variance ,variance in electrical psychometric field of study co
attides and personality traits in this psychometric test analysed staatiscally ..
2. Calculating variance is statistics measure that represent the degree of spread in set o
^2\)) of a set of values \(x_1,x_2\ isots ,x_n\) is calculated using formula
€[| sigma ^2= \ frac { 1}{n}\ sum _ {I=1}^{x_i_\ mu)^2\]
- \(\ sigma ^ 2\)= variance
.(X_1\) = Each inductive . observations
- formulation

_____

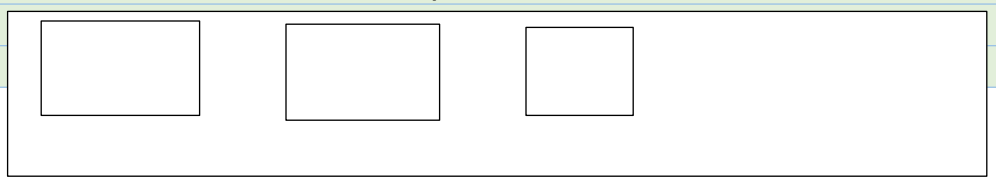
In electrical engineering under is crucial for analyse data especially.
1) variance : measure how a set of value differ from the mean of set it quantite the sprea
-for a set of \(n\) observt it quantt the spread of the data .
Point formula for variance.
For a set of \(n\) observations \(x_1,x_2,\ isots ,x
|[| Sigma ^2=\ frac {1}{n} sum_
{I=1}^{n}(x_1-\mu)^2
Where.\(\ sigma ^ 2))= variance.
.\(n\)= number of observations .
.\(xi)= each individual observation .
.\(| mu\)= mean of thicd ..
---\[|my= \ frac {1}{n} sum _ { I= 1}{n}, x _1\



_____

2.covariance measure the degree to which two the degree to which two random variable
variable : { foetus set of observations \ (x=(x_1,x-2\dot ,x_ n)\) and \ + y= (y-@,y-2,\ ido

3. Calcul the electrical installation requirements for a building term .
- understanding power and energy .
* Power ,O * measure in kilowatt (kW) it represent the rate at which electrical energy is
* Energy ,(E) : measured in kilowatt hour ,kWh it represents.
.\[E= O\ times \ ]
.\(E\)= energy in kWh



.\(P\)= power in kW

.\(t\) = time in hours .

- 2 calculating total power demand to calculate the total power for a building.

- list of electrical load ligthning ,10 fixtures a ,15 watt each ,HVAC : 3 kW , appliances ,2

2 calculate total power demand ligthning \(10\ text{ fixtures \ times

```
'
' Macro1 Macro
' Code resetb and initialize form with default  form . Sub reset _form () Dim I row as long  With  .txt student name.text=” “ Txt student name  backcolor +vb white  Txt father name .text =”” Txt father  name back color + vb white . Txt dob text =”””’’’’
'


'
    Application.Goto Reference:="Macro1"
    ActiveWorkbook.Save
    ActiveWorkbook.Save
    Range("B34").Select
    ActiveSheet.Paste
    Range("B36:Y63").Select
    ActiveSheet.ListObjects.Add(xlSrcRange, Range("$B$36:$Y$63"), , xlNo).Name =
_
       "Table16"
    Range("Table16[#All]").Select
    ActiveWindow.ScrollRow = 31
    ActiveWindow.ScrollRow = 30
    ActiveWindow.ScrollRow = 29
    ActiveWindow.ScrollRow = 28
    ActiveWindow.ScrollRow = 27
    ActiveWindow.ScrollRow = 26
    Range("O32").Select
    ActiveWindow.ScrollColumn = 1
    Range("B38").Select
    ActiveCell.FormulaR1C1 = "7"
    Range("C38").Select
    ActiveCell.FormulaR1C1 = "8"
```

```
    Range("D38").Select
    ActiveCell.FormulaR1C1 = "9"
    Range("E38").Select
    ActiveWorkbook.Save
End Sub


Sub Macro2()
'
' Macro2 Macro
' text field  buttons for the number  operator  button for the result  off , clear , back space  option explicit  public class form 1 dim operand 1 as double dim operad 2 as double  dim {operator} as string  dim has decimal boolean dim tmp nalue  as double
'

'
    Application.Run _
        "'Copy of PROJECT DRAWING WORKSHET    TSHINGOMBE DESIGN ANALYSE ENGIN  Book12.xlsx'!Macro2"
End Sub
Sub Macro3()
'
' Macro3 Macro
' "500000fff03ff000018000a0410000d00095000001"  string .cmd=" "; cmd=cmd+"5000";//sub head (not) cmd=cmd+"00"//network number cmd+cmd+"ff";//plc number cmd+""03ff";//demand object module i/o.number cmd=cmd+"001c";length demand data  cmd=cmd+cmd+000A";cpu in
'

'
End Sub
UserForm1 - 1
Private Sub Label9_Click()
End Sub
```

```
Private Sub OptionButton1_Click()
End Sub
Private Sub OptionButton2_Click()
End Sub
Private Sub TextBox1_Change()
End Sub
Private Sub TextBox2_Change()
End Sub
Private Sub TextBox3_Change()
End Sub
Private Sub TextBox4_Change()
End Sub
Private Sub TextBox6_Change()
End Sub
Private Sub TextBox7_Change()
End Sub
Private Sub TextBox8_Change()
End Sub
Private Sub UserForm_Click()
End Sub
Private Sub UserForm_DblClick(ByVal Cancel As MSForms.ReturnBoolean)
End Sub
Private Sub UserForm_Initialize()
End SubUserForm2 - 1
Private Sub CommandButton13_Click()
End Sub
Private Sub CommandButton17_Click()
End Sub
Private Sub CommandButton3_Click()
End Sub
Private Sub CommandButton7_Click()
End Sub
Private Sub Label1_Click()
End Sub
Private Sub TextBox1_Change()
End Sub
Private Sub TextBox1_DblClick(ByVal Cancel As MSForms.ReturnBoolean)
End SubUserForm3 - 1
Private Sub Label4_Click()
End Sub
Private Sub Label5_Click()
End Sub
Private Sub TextBox1_Change()
End Sub
Private Sub UserForm_Click()
End SubModule1 - 1
Sub Macro1()
'
' Macro1 Macro
' Code resetb and initialize form with default form . Sub reset _form () Dim I row as long With
.tx
t student name.text=” “ Txt student name backcolor +vb white Txt father name .text =””
Txt father n
ame back color + vb white . Txt dob text =”’’’’’’
'
```

```
'
Application.Goto Reference:="Macro1"
ActiveWorkbook.Save
ActiveWorkbook.Save
Range("B34").Select
ActiveSheet.Paste
Range("B36:Y63").Select
ActiveSheet.ListObjects.Add(xlSrcRange, Range("$B$36:$Y$63"), , xlNo).Name = _
"Table16"
Range("Table16[#All]").Select
ActiveWindow.ScrollRow = 31
ActiveWindow.ScrollRow = 30
ActiveWindow.ScrollRow = 29
ActiveWindow.ScrollRow = 28
ActiveWindow.ScrollRow = 27
ActiveWindow.ScrollRow = 26
Range("O32").Select
ActiveWindow.ScrollColumn = 1
Range("B38").Select
ActiveCell.FormulaR1C1 = "7"
Range("C38").Select
ActiveCell.FormulaR1C1 = "8"
Range("D38").Select
ActiveCell.FormulaR1C1 = "9"
Range("E38").Select
ActiveWorkbook.Save
End Sub
Sub Macro2()
'
' Macro2 Macro
' text field buttons for the number operator button for the result off , clear , back space optio
n explicit public class form 1 dim operand 1 as double dim operad 2 as double dim
{operator} as stri
ng dim has decimal boolean dim tmp nalue as double
'
'
Application.Run _
"'Copy of PROJECT DRAWING WORKSHET TSHINGOMBE DESIGN ANALYSE ENGIN
Book12.xlsx'!Macro2"
End Sub
Sub Macro3()
'
' Macro3 Macro
' "500000fff03ff000018000a0410000d00095000001" string .cmd=" ";
cmd=cmd+"5000";//sub head (not) cmd=c
md+"00"//network number cmd+cmd+"ff";//plc number cmd+""03ff";//demand object
module i/o.number cmd=cm
d+"001c";length demand data cmd=cmd+cmd+000A";cpu in
'
'
End SubModule2 - 1Class1 – 1

UserForm3 - 1

Private Sub Label4_Click()
```

End Sub

Private Sub Label5_Click()

End Sub

Private Sub TextBox1_Change()

End Sub

Private Sub UserForm_Click()

End Subplc communication program

plc ip adress

plc read data

plc write data

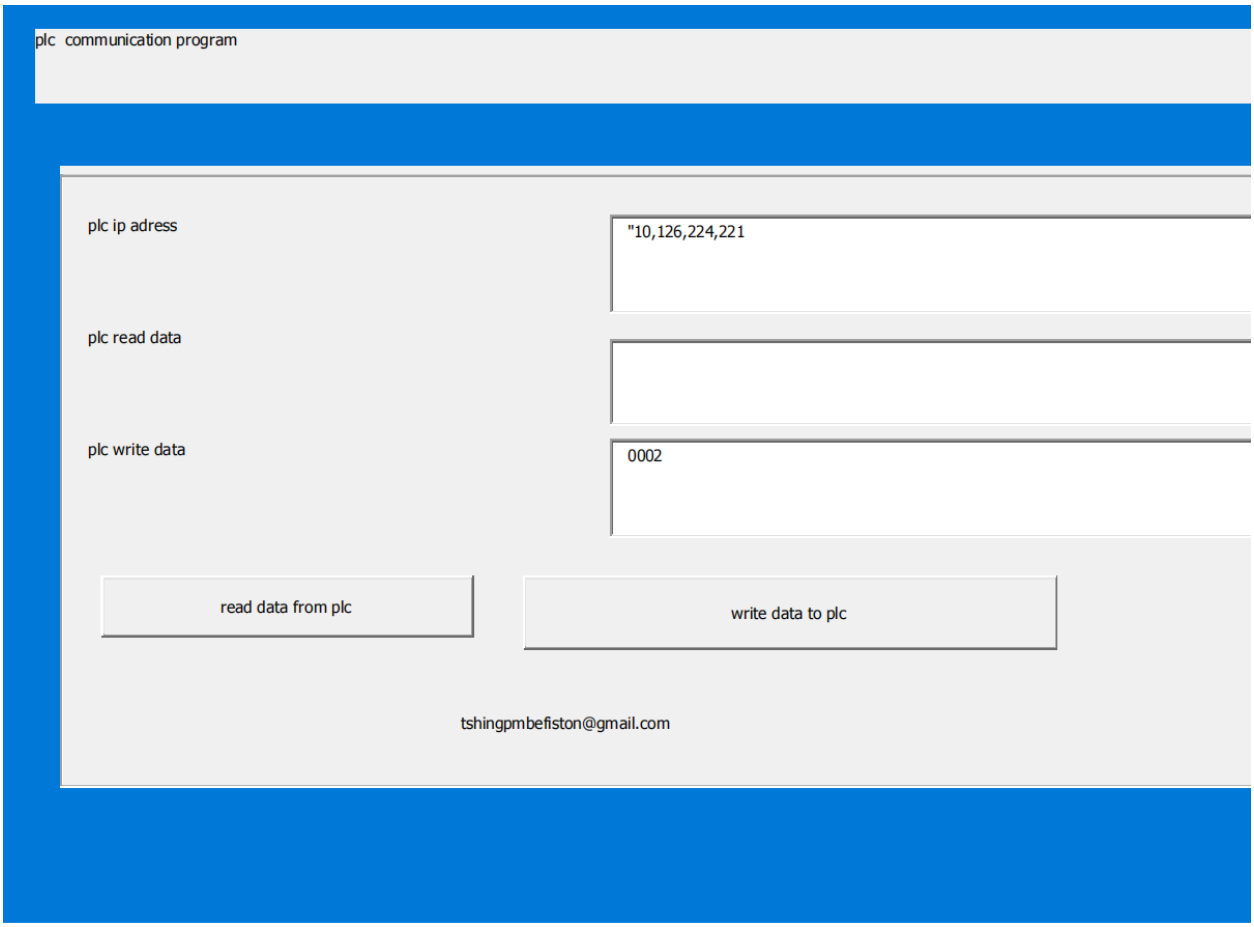
"10,126,224,221

0002

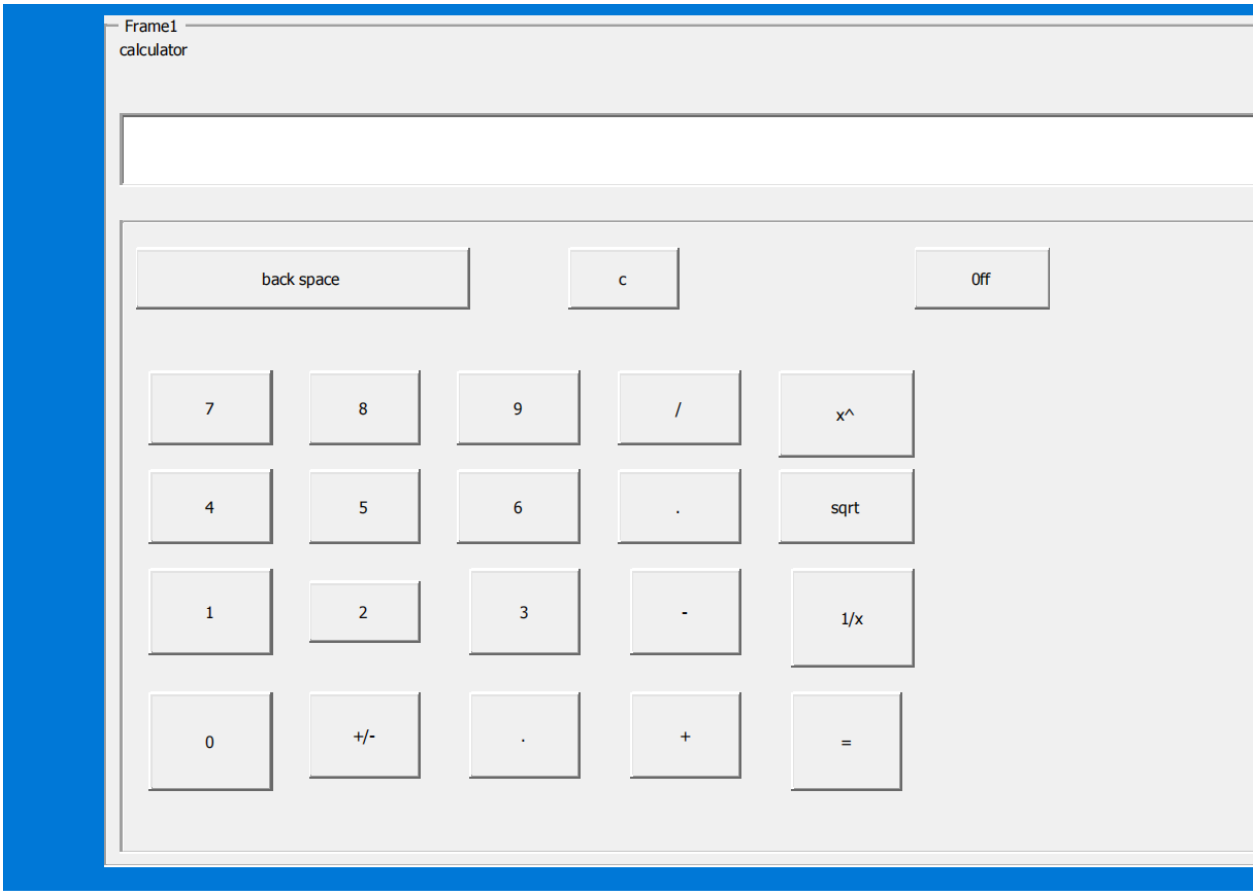
tshingpmbefiston@gmail.com

read data from plc

write data to plc



UserForm2 - 1
```
Private Sub CommandButton13_Click()
End Sub
Private Sub CommandButton17_Click()
End Sub
Private Sub CommandButton3_Click()
End Sub
Private Sub CommandButton7_Click()
End Sub
Private Sub Label1_Click()
End Sub
Private Sub TextBox1_Change()
End Sub
Private Sub TextBox1_DblClick(ByVal Cancel As MSForms.ReturnBoolean)
End Subcalculator
```
back space
c
0ff
7
8
9
/
x^
4
1
0
5
6
.
sqrt
2
3
-
1/x
+/-
.
+
=
Frame1


Frame1
calculator
back space
c
0ff
7
8
9
/
x^
4
5
6
.
sqrt
1
2
3
-
1/x
0
+/-
.
+
=

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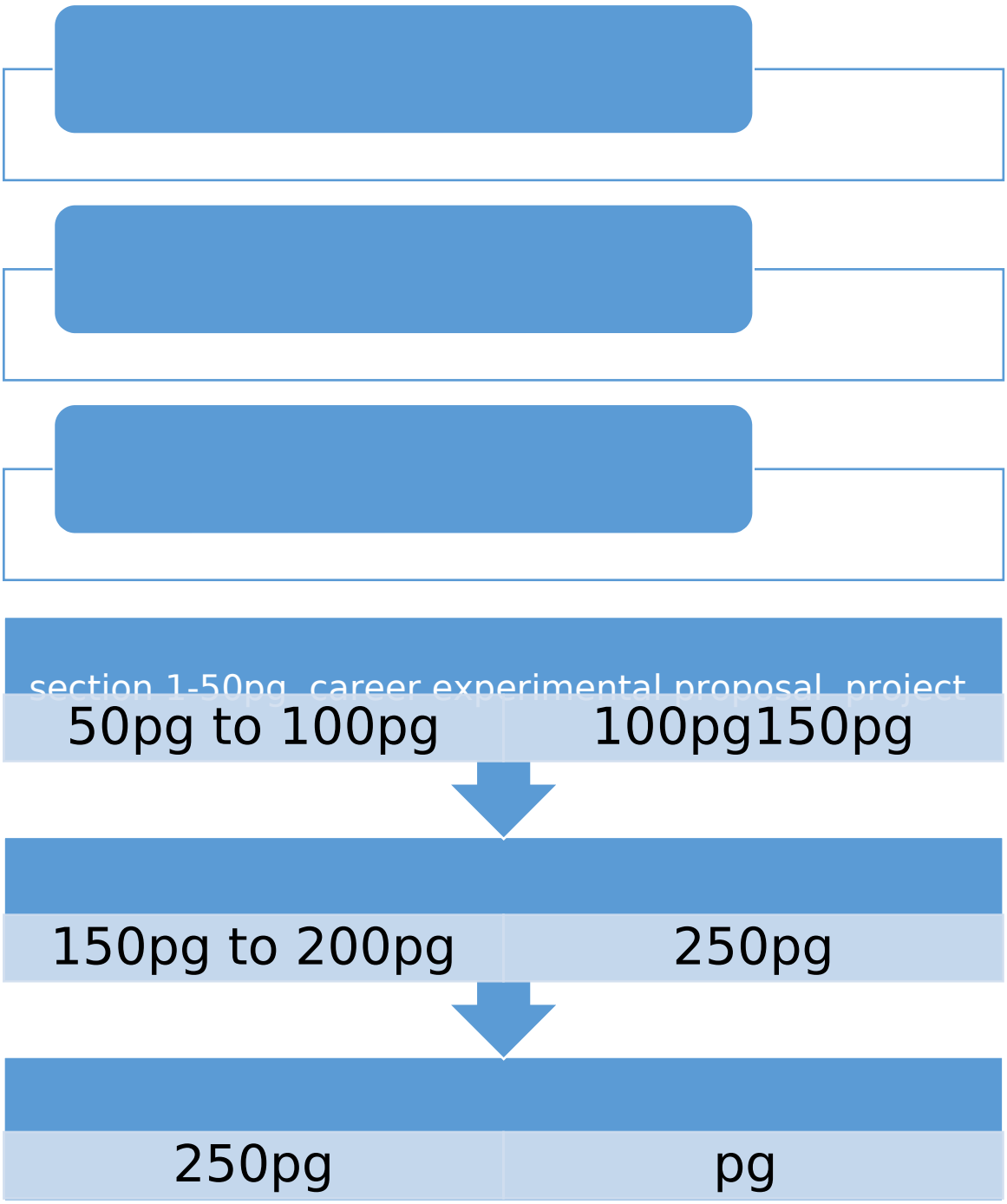
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1. Circulum design format offline.
-Name : tshingombe Tshitadi

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course title	course objectives	course description	activity to carry out	ID source of
Advanced Electromagnetic Theory	Advanced Electromagnetic Theory: This delves into Maxwell's equations, electromagnetic waves, and their applications in various fields such as antenna design, microwave engineering, and more.	Course Descriptions	Advanced Electromagnetic Theory	Sources for Advanced Electrical Engineering Courses
Digital Signal Processing				
Control Systems Design	Digital Signal Processing (DSP): This involves the analysis and manipulation of signals. It's crucial in areas such as communications, audio and speech processing, radar, and image processing.	Advanced Electromagnetic Theory: This course delves into the intricacies of Maxwell's equations and their applications. Topics include electromagnetic wave propagation, radiation, and scattering. Students will learn to design and analyze antennas, microwave circuits, and other electromagnetic devices.	Objectives:	1.
Advanced Communication Systems				Advanced Electromagnetic Theory
Power Systems Engineering	Control Systems Design: This focuses on designing systems that can control the behavior of other systems. Applications include robotics, aerospace, automotive systems, and industrial automation.	Digital Signal Processing (DSP): This course focuses on the principles and applications of discrete-time signal processing. Topics covered include sampling, digital filter design, Fourier transforms, and signal analysis. Students will gain hands-on experience with MATLAB/Python for implementing DSP algorithms.	•	
Renewable Energy Systems			Understand Maxwell's equations and their applications.	2.
VLSI (Very Large Scale Integration) Design	Advanced Communication Systems: This covers the principles and technologies behind modern communication systems, including wireless communications, fiber optics, and satellite communications.	Control Systems Design: This course covers the design and analysis of feedback control systems. Students will learn about root locus, frequency response, and state-space methods for controller design. Applications include robotics, aerospace, and automotive systems.		1.
Machine Learning in Electrical Engineering			•	Books: "Classical Electrodynamics" by John David Jackson, "Principles of Electrodynamics" by Melvin Schwartz
	Power Systems Engineering: This involves the generation, transmission, and distribution of electrical power. It covers topics such as power system stability, smart grids, and renewable energy integration.	Advanced Communication Systems: This course explores the principles of modern communication systems. Topics include modulation and demodulation, noise analysis, and the design of wireless and optical communication systems. Students will also study the latest advancements in communication technologies.	•	
			Analyze electromagnetic wave propagation in different media.	2.
	Renewable Energy Systems: This explores the technologies and systems used to generate energy from renewable sources like solar, wind, and hydroelectric power. It's increasingly important for sustainable development.	Power Systems Engineering: This course covers the generation, transmission, and distribution of electrical power. Topics include power system stability, protection, and smart grids. Students will also learn about the integration of renewable energy sources into power grids.		3.
			•	Online Courses: MIT OpenCourseWare, Coursera

	▯ ▯ VLSI (Very Large Scale Integration) Design: This involves designing and creating integrated circuits with millions of transistors on a single chip. It's essential for the development of modern electronic devices.	Renewable Energy Systems: This course examines the technologies and systems used to generate energy from renewable sources such as solar, wind, and hydroelectric power. Topics include energy conversion, efficiency analysis, and the design of renewable energy systems.		•	
				Design and analyze antennas and microwave circuits.	4.
	▯ ▯ Machine Learning in Electrical Engineering: This examines the application of machine learning techniques to solve problems in electrical engineering, such as predictive maintenance, signal processing, and system optimization	VLSI (Very Large Scale Integration) Design: This course focuses on the principles of designing integrated circuits with millions of transistors. Topics include digital and analog circuit design, fabrication processes, and the use of VLSI design tools. Students will gain practical experience in designing and simulating VLSI circuits.			3.
				•	Digital Signal Processing (DSP)
	▯ ▯ Advanced Electromagnetic Theory: This delves into Maxwell's equations, electromagnetic waves, and their applications in various fields such as antenna design, microwave engineering, and more.	Machine Learning in Electrical Engineering: This course introduces the application of machine learning techniques to solve electrical engineering problems. Topics include supervised and unsupervised learning, neural networks, and deep learning. Students will apply machine learning to areas such as predictive maintenance, signal processing, and system optimization.	Activities:		
					4.
	▯ ▯ Digital Signal Processing (DSP): This involves the analysis and manipulation of signals. It's crucial in areas such as communications, audio and speech processing, radar, and image processing.	These descriptions should give a comprehensive overview of each course. If you need more detailed information on any specific topic or have any other questions, feel free to ask!		•	1.

Engi

a

ure! Here is a basic database schema for an online merch store:

Entities:
1. Users:tshingombe tshitadi fiston
- username: tshingombe fiston

- email: tshingombefiston@gmail.com
- password

2. Products
- product_id
- product_name: engineering thesis journal assement
- description: engineering
- price
- category_id

3. Categories
- category_id (
- category_name

4. Orders
- order_id
- user_id
- order_date
- total_amount: 50000$

5. OrderDetails
- order_detail_id
- order_id
- product_id
- quantity
- subtotal

Relationships:
- One user can have multiple orders (One-to-Many)
- One order can have multiple products (One-to-Many)
- One product can belong to one category (Many-to-One)

This is a basic schema and can be expanded based on additional requirements such as product variations, discounts, shipping details, etc.
  #(Token Used By this Response 259)

Entities:
1. Users
- user_id (Primary Key)
- username: tshingombe fiston
- email: tshingombefiston@gmail.com
- password

2. Products
- product_id (Primary Key)
- product_name: engineering thesis journal assessment
- description: engineering
- price
- category_id

3. Categories
- category_id (Primary Key)
- category_name

4. Orders
- order_id (Primary Key)
- user_id (Foreign Key referencing Users)
- order_date
- total_amount: $50000

5. OrderDetails
- order_detail_id (Primary Key)
- order_id (Foreign Key referencing Orders)
- product_id (Foreign Key referencing Products)
- quantity
- subtotal
Thank you for providing the information. Based on the input given, I will proceed to create a personal webpage for you with the following details:

Personal Webpage for Kananga5

Color Scheme: Blue and White
Theme: Professional and Academic
Content/Sections:
1. Introduction
2. Academic Achievements and Research Topics
3. University Thesis Publications
4. Contact Information

Short Bio:
Kananga5 is a dedicated researcher and academic enthusiast with a passion for exploring diverse topics within their field of study. Their academic journey has led to numerous achievements and publications, including notable work on diverse university thesis topics
In a Master of Science in Electrical Engineering (MSEE) program with a focus on electrical and industrial electronics, you may encounter a range of core courses and topics that form the foundation of your studies. Here are some common core courses and topics you may expect to encounter in this specialization:

1. **Power Systems Analysis**:
   - Power System Stability
   - Power Flow Analysis
   - Fault Analysis
   - Power System Protection

2. **Industrial Electronics**:
   - Power Electronics
   - Variable Frequency Drives
   - Industrial Automation
   - Control Systems

3. **Electric Machines and Drives**:
   - Electric Machine Design
   - Motor Control Techniques
   - Electric Drives
   - Electromagnetic Field Theory

4. **Embedded Systems**:
   - Microcontroller Programming
   - Real-time Operating Systems
   - Embedded System Design
   - Interface and Communication Protocols

5. **Signal Processing**:
   - Digital Signal Processing
   - Image Processing
   - Audio Processing
   - Filter Design

6. **Control Systems**:
   - Feedback Control Systems
   - State-Space Analysis
   - PID Controllers
   - Robust Control

7. **Communication Systems**:
   - Digital Communication
   - Wireless Communication
   - Optical Communication
   - Modulation Techniques

8. **Electrical Design and Testing**:
   - Circuit Design
   - PCB Design
   - Testing and Troubleshooting
   - Reliability Engineering

When working on your thesis in electrical engineering with a focus on electrical and industrial electronics, you may explore advanced topics within these areas and conduct research on cutting-edge technologies and applications. It is essential to stay updated on industry trends, advancements, and emerging technologies to excel in this field.

Please note that specific course offerings and topics may vary depending on the university and the program curriculum. It is recommended to consult with your academic advisor or program coordinator for a detailed outline of the courses and topics

It seems like you're looking to combine trade theory, electrical engineering, electronics, and mathematics in your thesis. Here is a potential thesis topic that integrates these areas:

Title: "Integration of Trade Theory in the Design and Optimization of Electrical and Electronic Systems using Mathematical Models"

Abstract:
This thesis explores the integration of trade theory principles in the field of electrical engineering and electronics to optimize the design and functionality of complex systems. By leveraging mathematical models and economic concepts, this study aims to enhance the efficiency, cost-

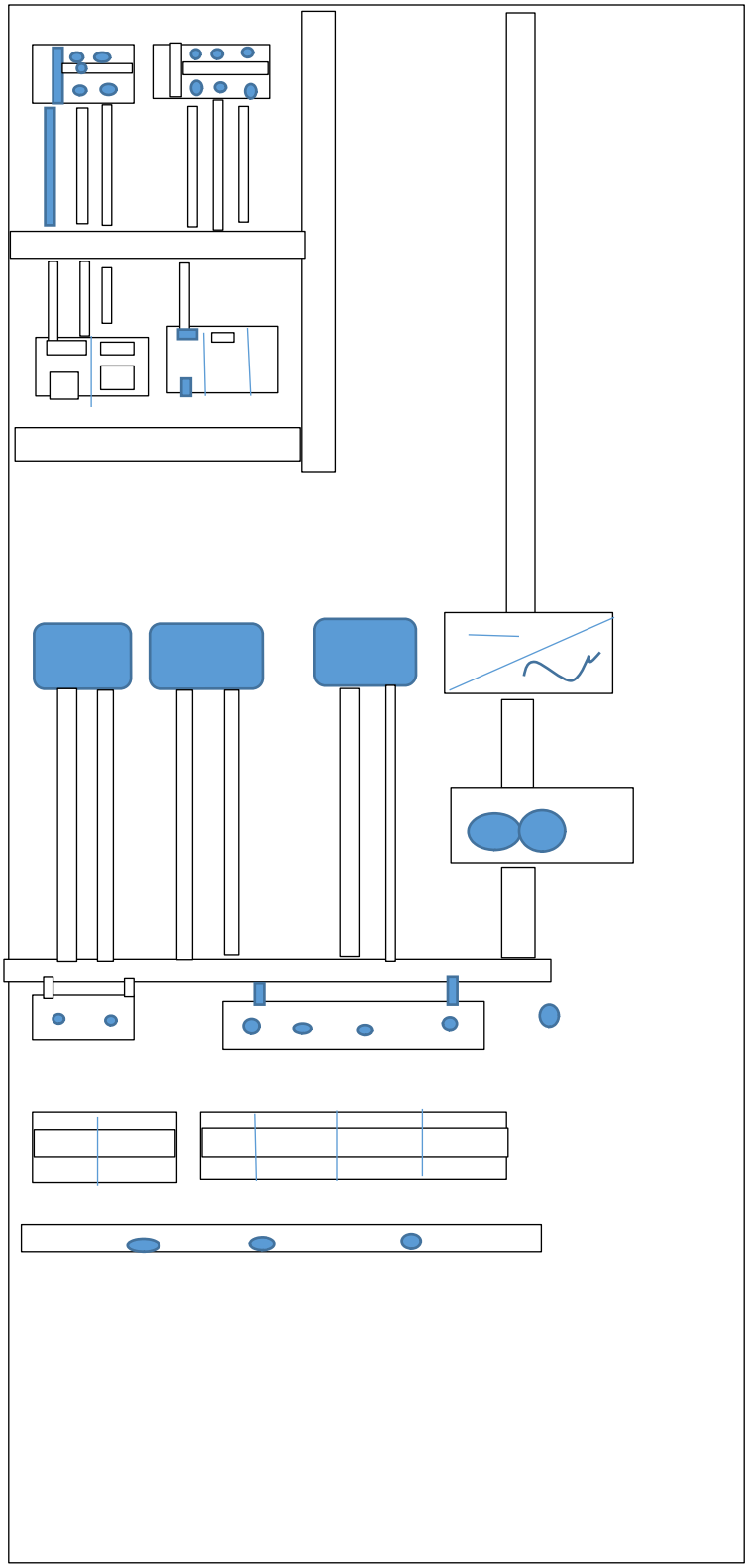
effectiveness, and performance of electrical and electronic systems in various industries.

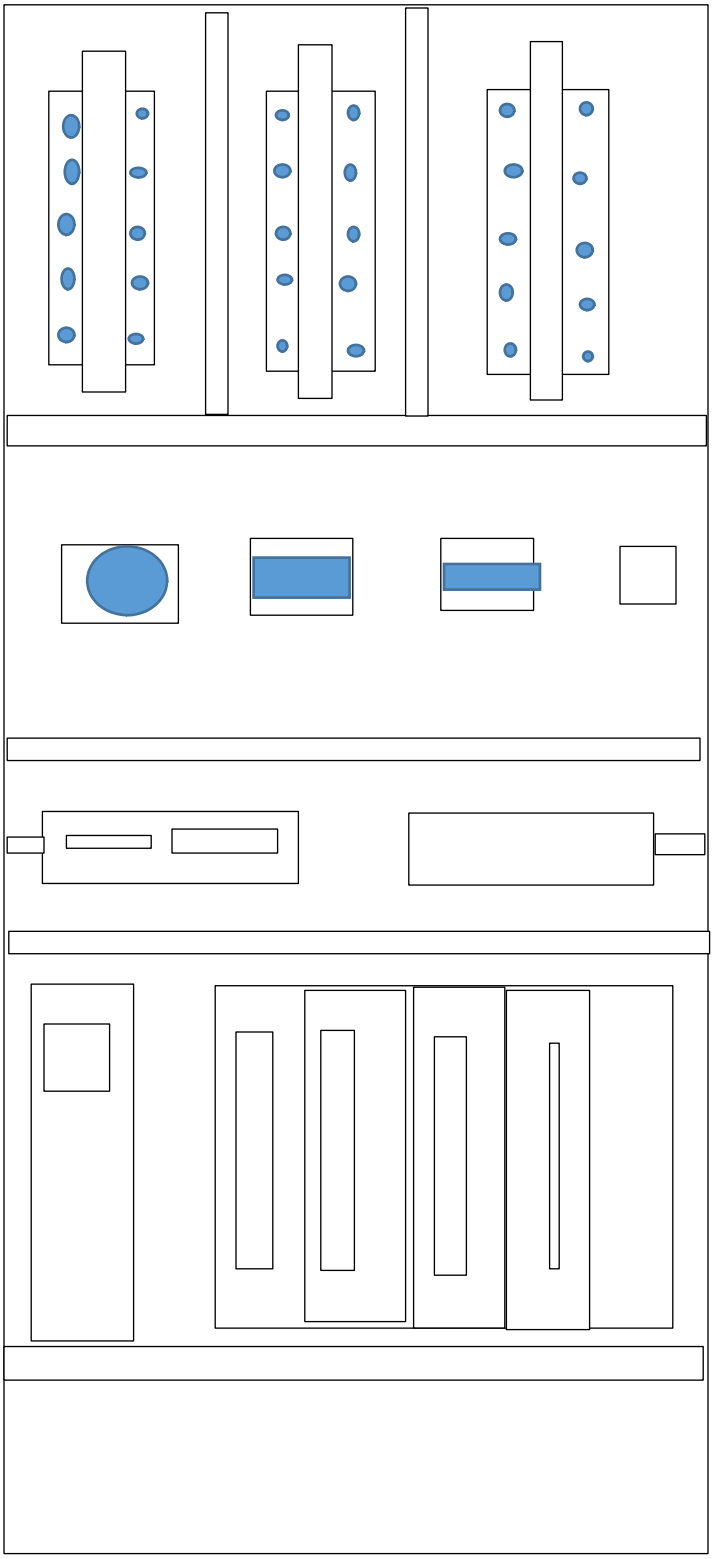
Research Objectives:
1. Investigate the key principles of trade theory and their applicability in the field of electrical engineering and electronics.
2. Develop mathematical models to represent the interplay between trade-offs, costs, and performance in system design.
3. Analyze case studies to demonstrate the application of trade theory in optimizing electrical and electronic systems.
4. Evaluate the impact of integrating trade theory and mathematical models on the efficiency and sustainability of complex systems.

Methodology:
- Review existing literature on trade theory, electrical engineering principles, and mathematical modeling techniques.
- Develop a framework for integrating trade theory concepts with mathematical models for system optimization.
- Conduct case studies and simulations to demonstrate the practical implications of the proposed approach.
- Analyze the results and draw conclusions on the benefits of incorporating trade theory in electrical and electronic system design.

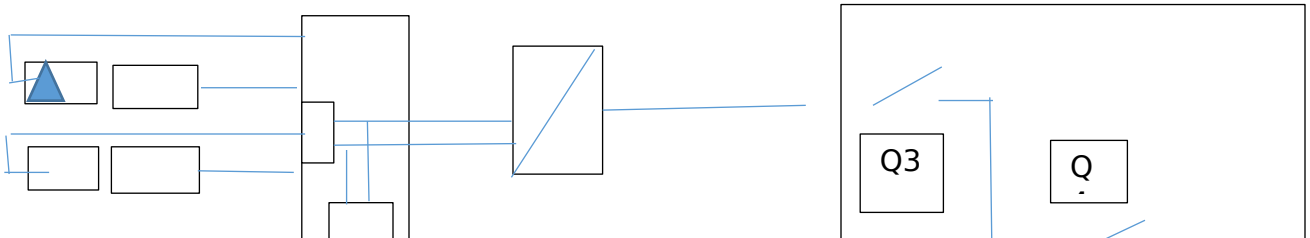
Potential Contributions:
- This thesis aims to bridge the gap between trade theory and engineering disciplines, offering a novel perspective on system design and optimization.
- The findings could provide valuable insights for practitioners in the field of electrical engineering, electronics, and trade economics.
- The integration of mathematical modeling and trade theory concepts may lead to more efficient and sustainable solutions in complex systems.

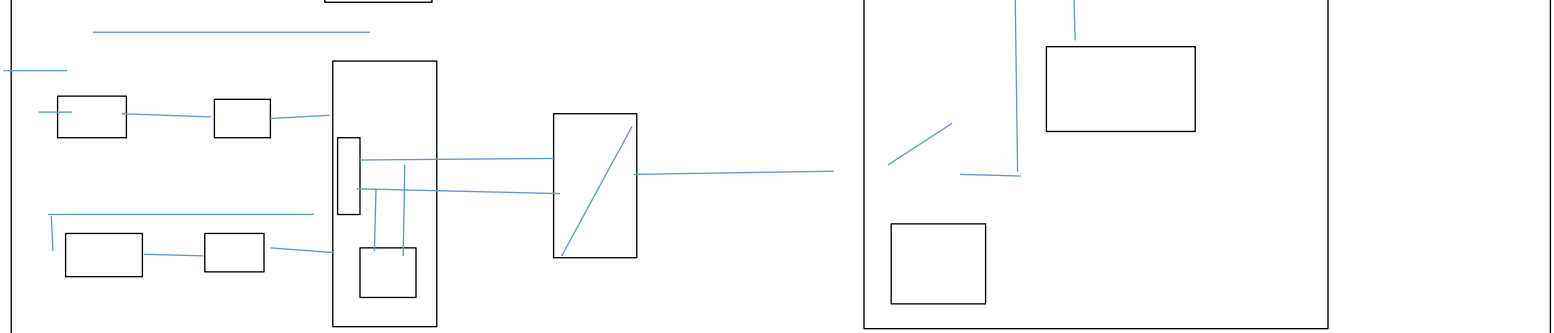
By focusing on the intersection of trade theory, electrical engineering, electronics, and mathematics, this thesis has the potential to make a significant contribution to the advancement of interdisciplinary research and innovation in these field

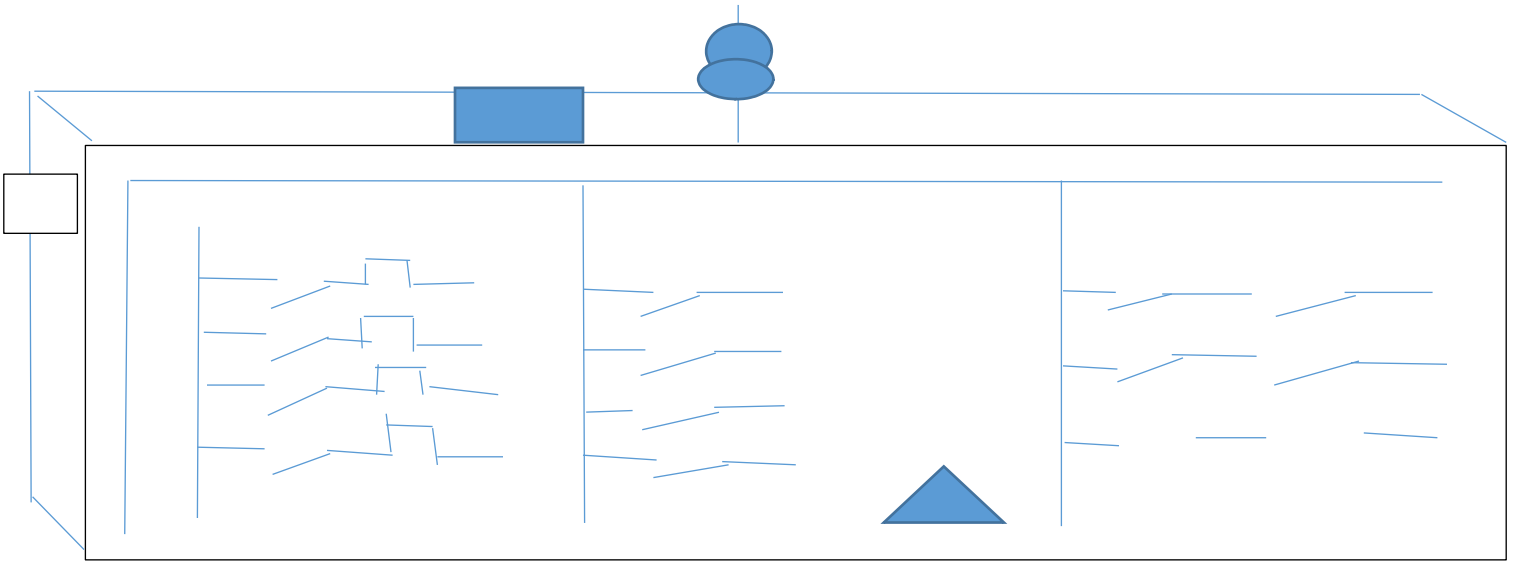


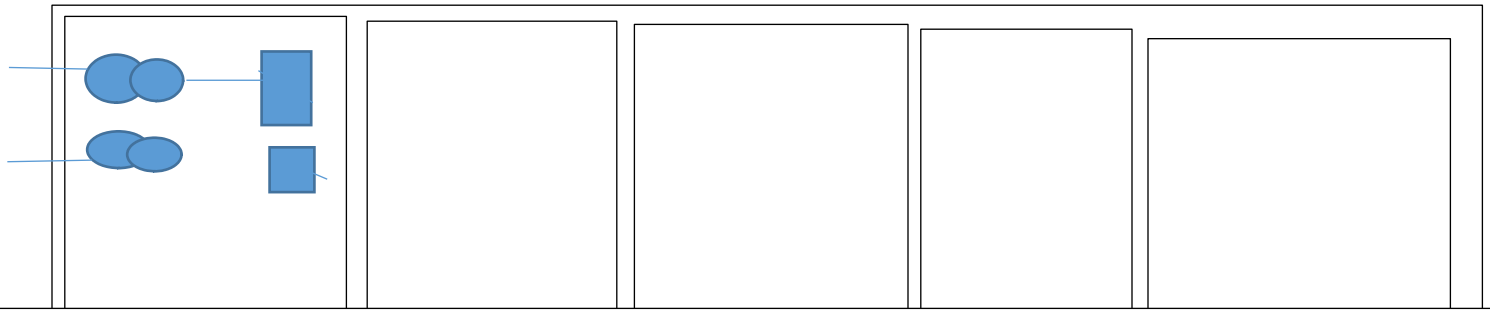


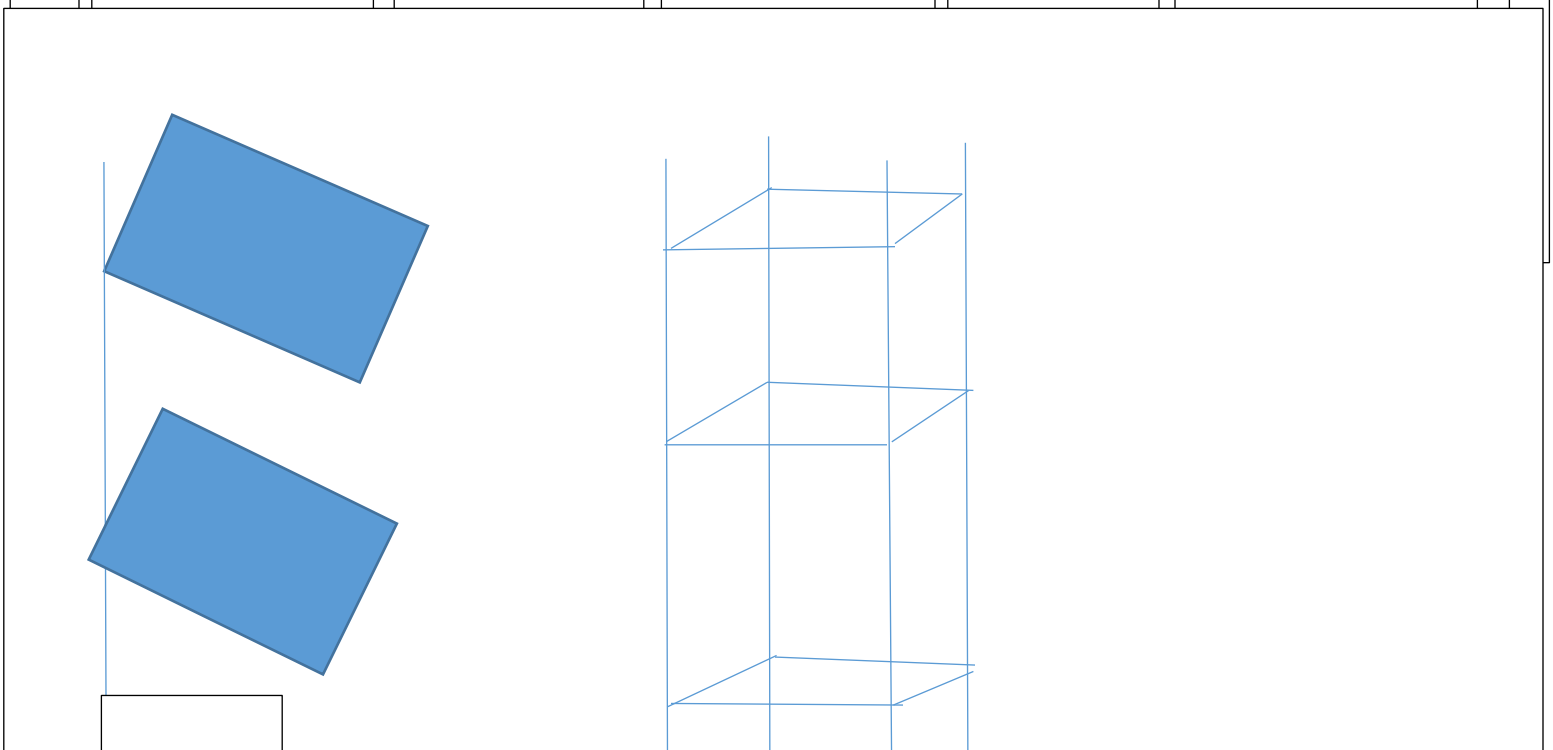
Pv installation 6.5 to 250kw,grid

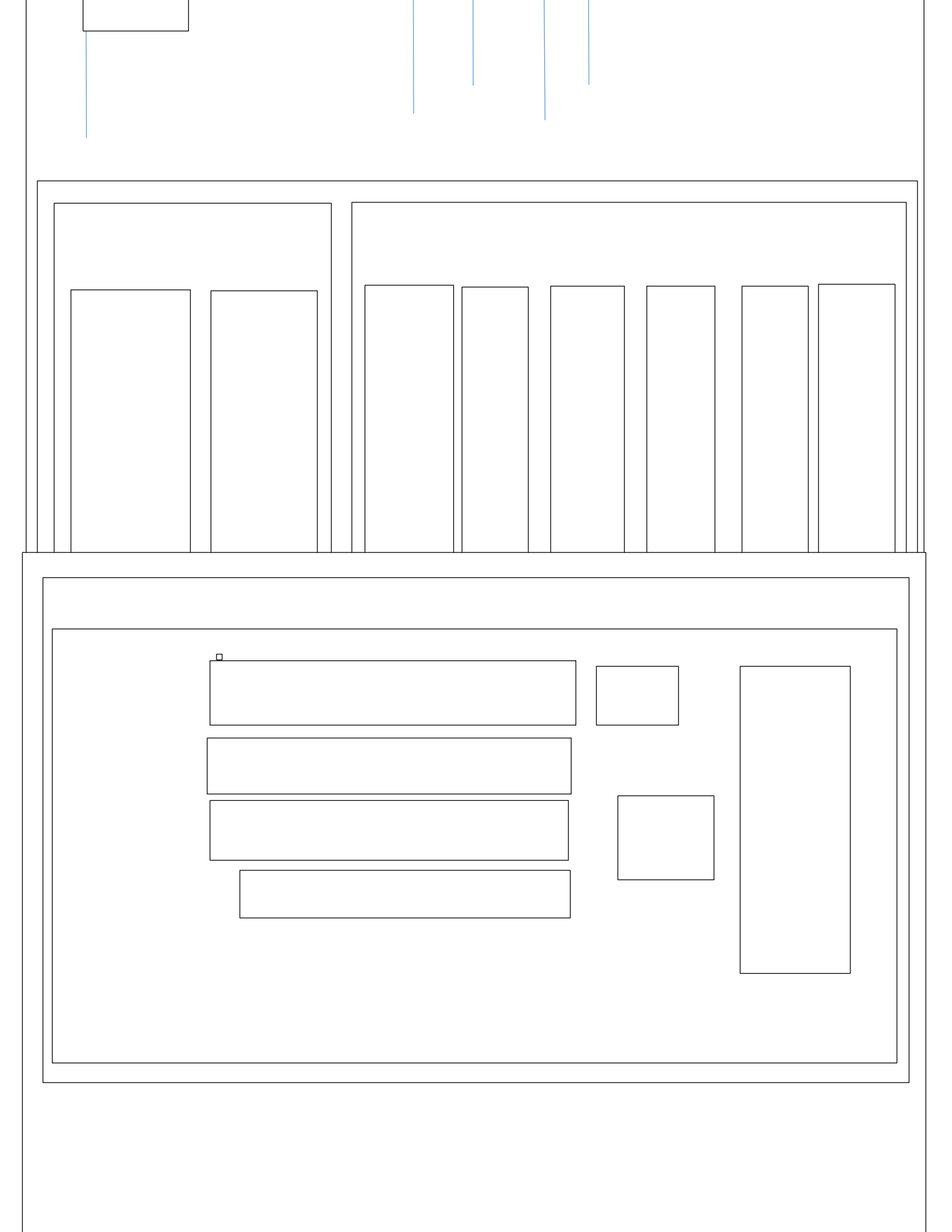


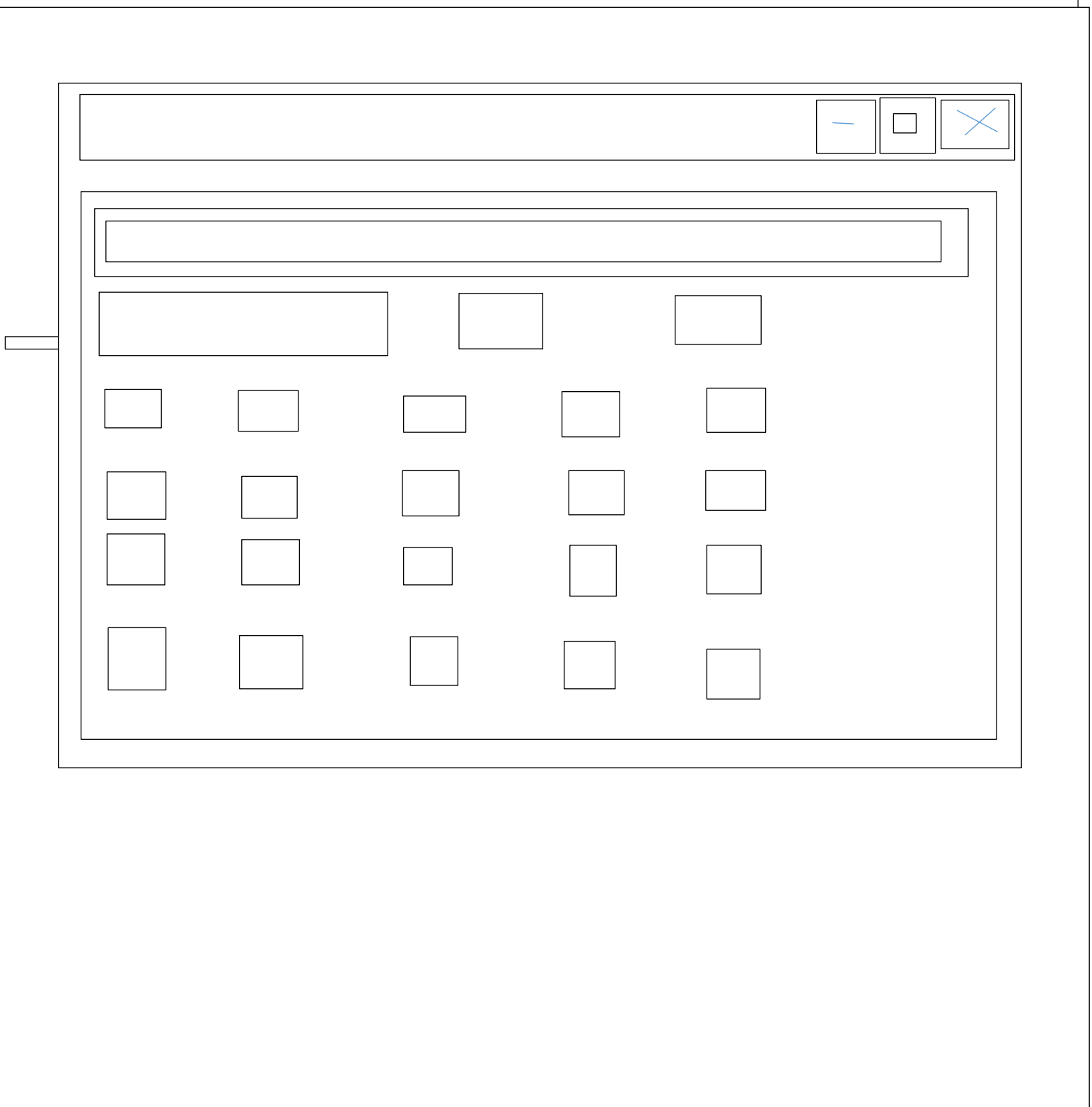


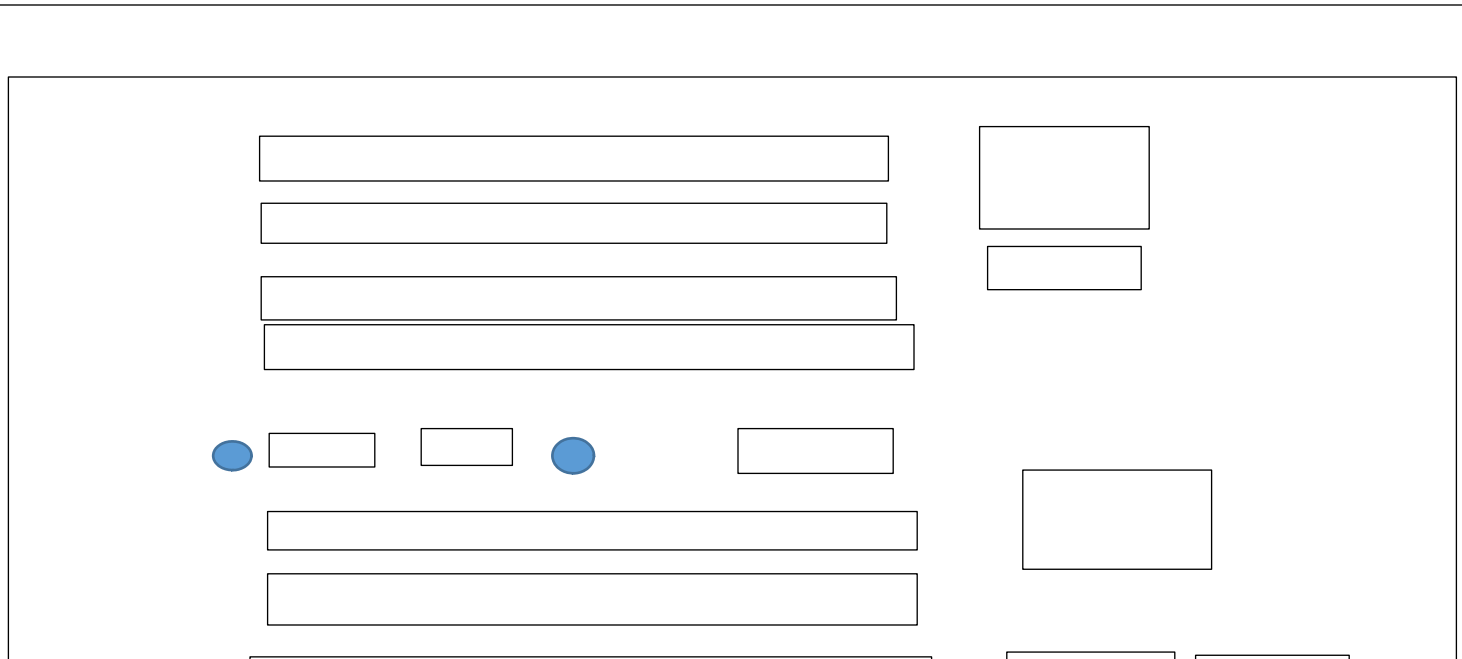


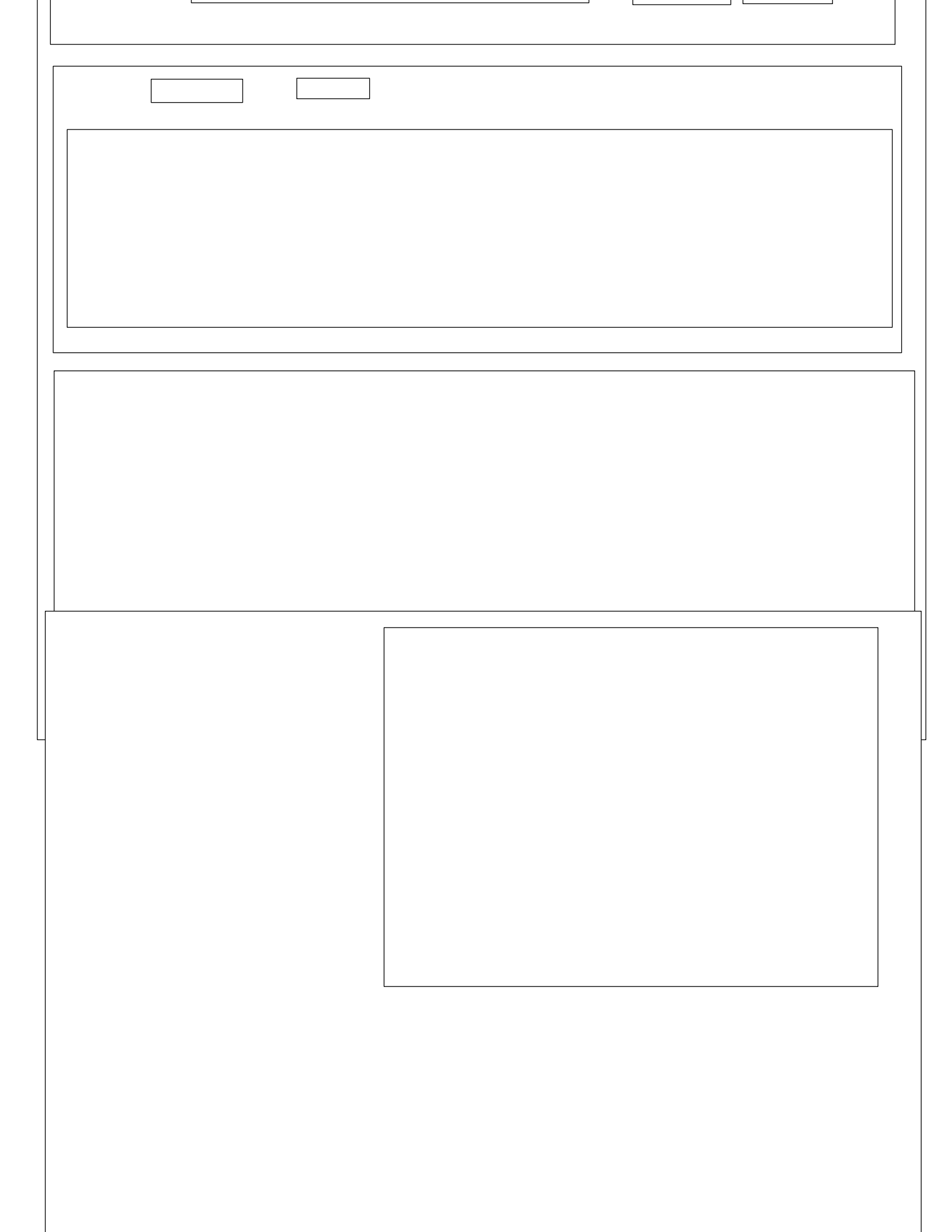


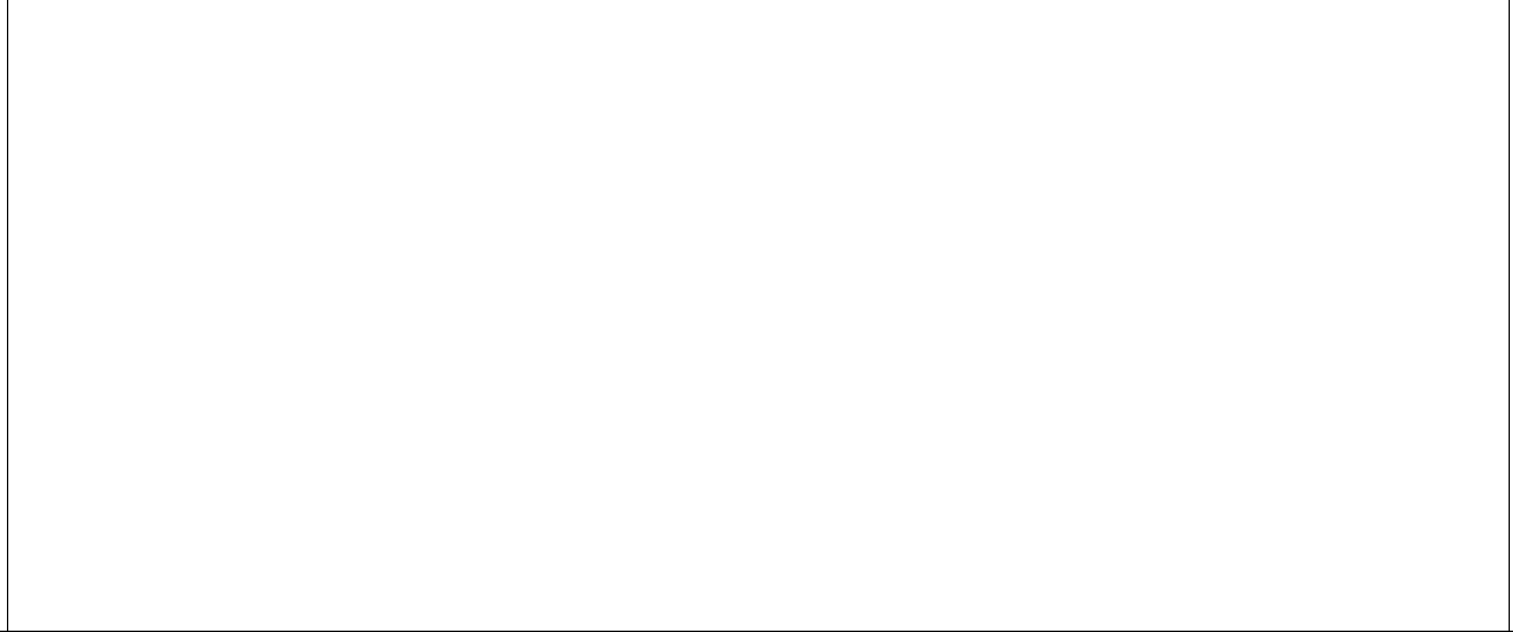


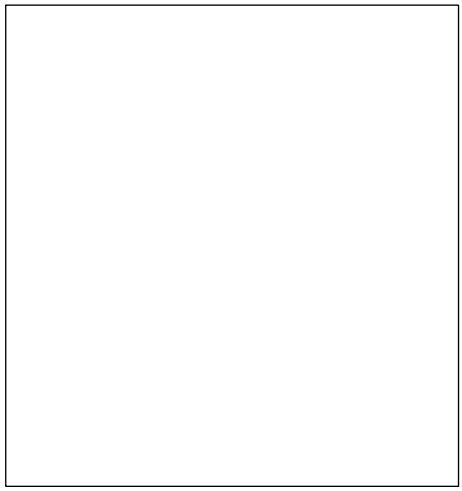


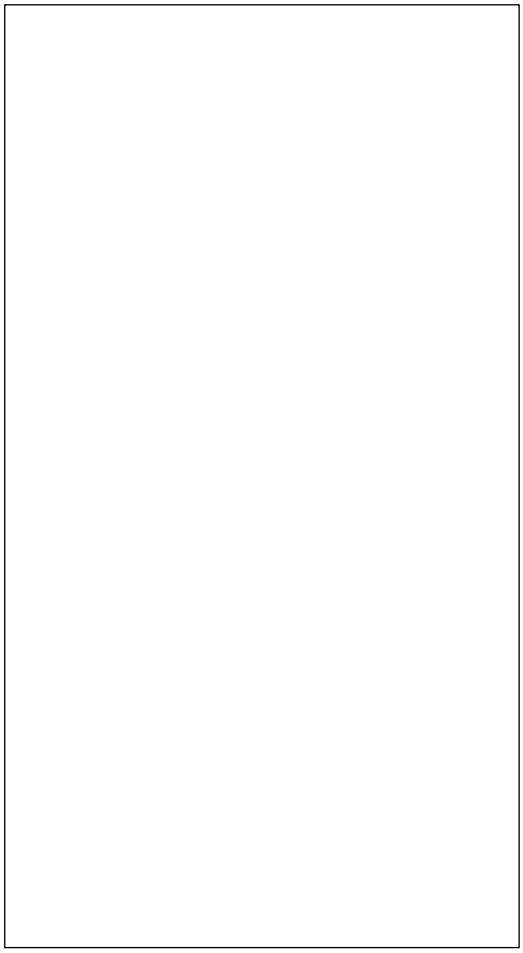


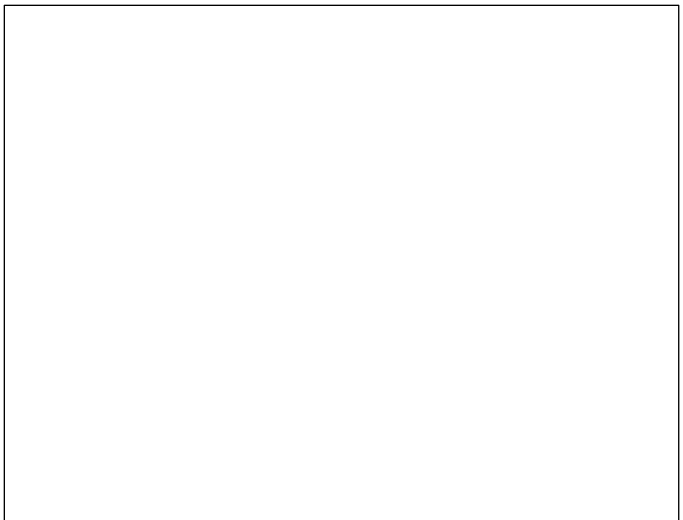


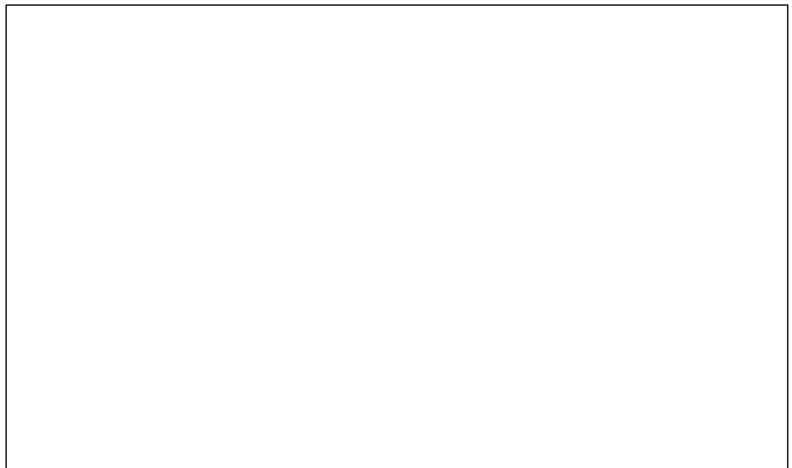












'

' Macro1 Macro

' Code resetb and initialize form with default form . Sub reset _form () Dim I row as long With .txt student name.text=” “ Txt student name backcolor +vb white Txt father name .text =”” Txt father name back color + vb white . Txt dob text =”’’’’’’

'

'

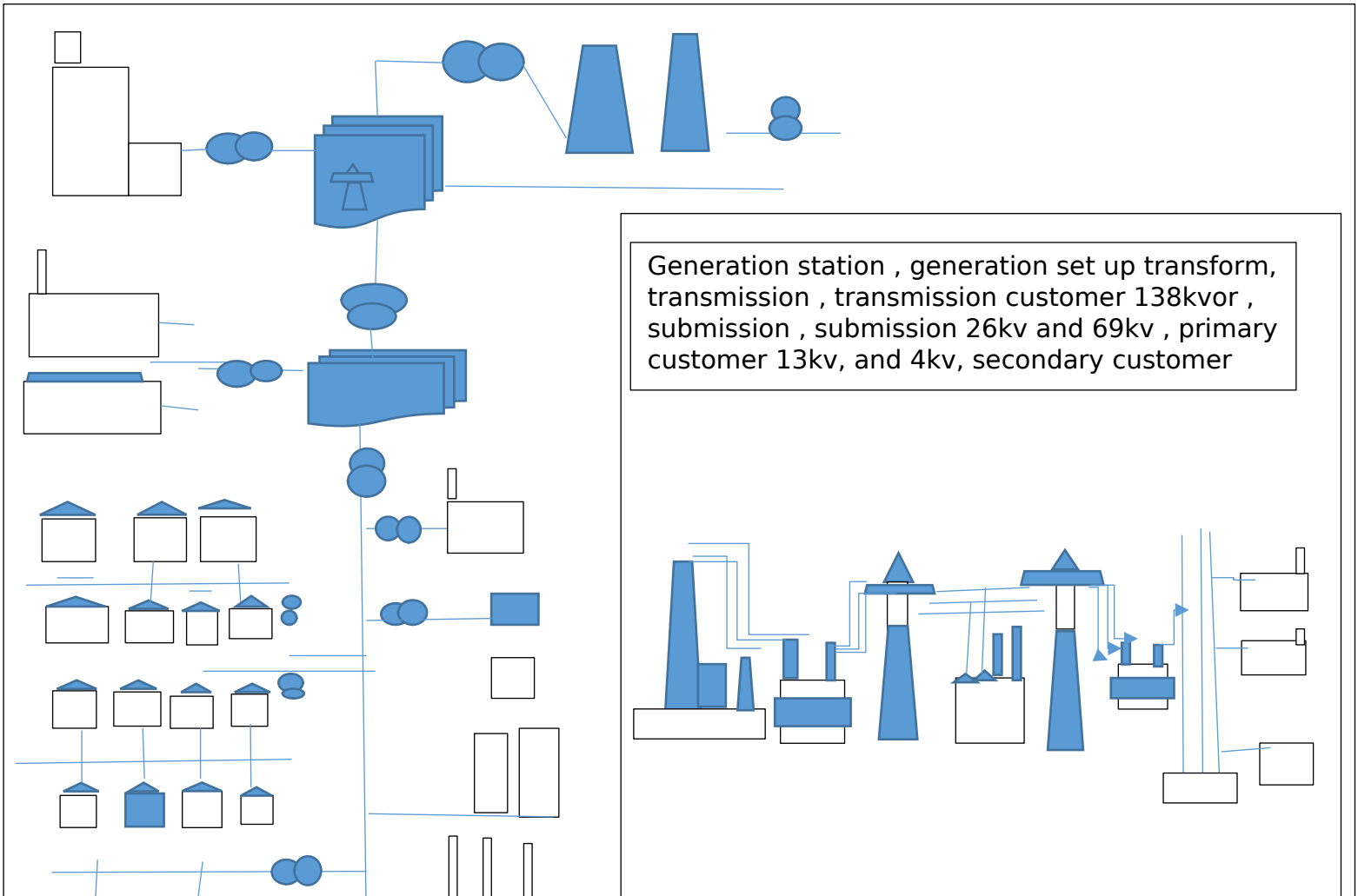
    Application.Goto Reference:="Macro1"

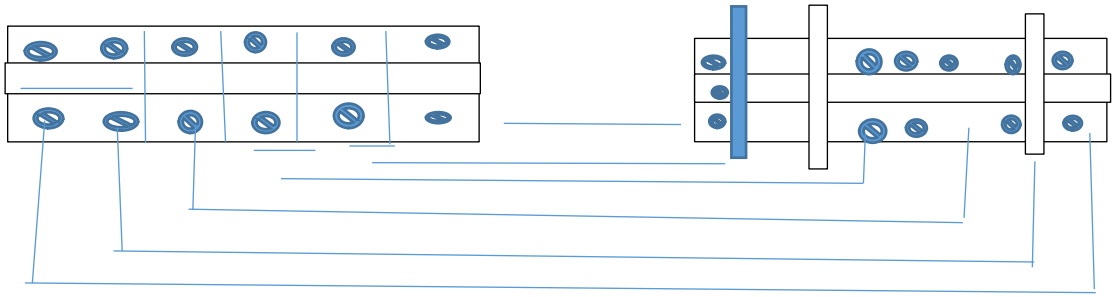
    ActiveWorkbook.Save

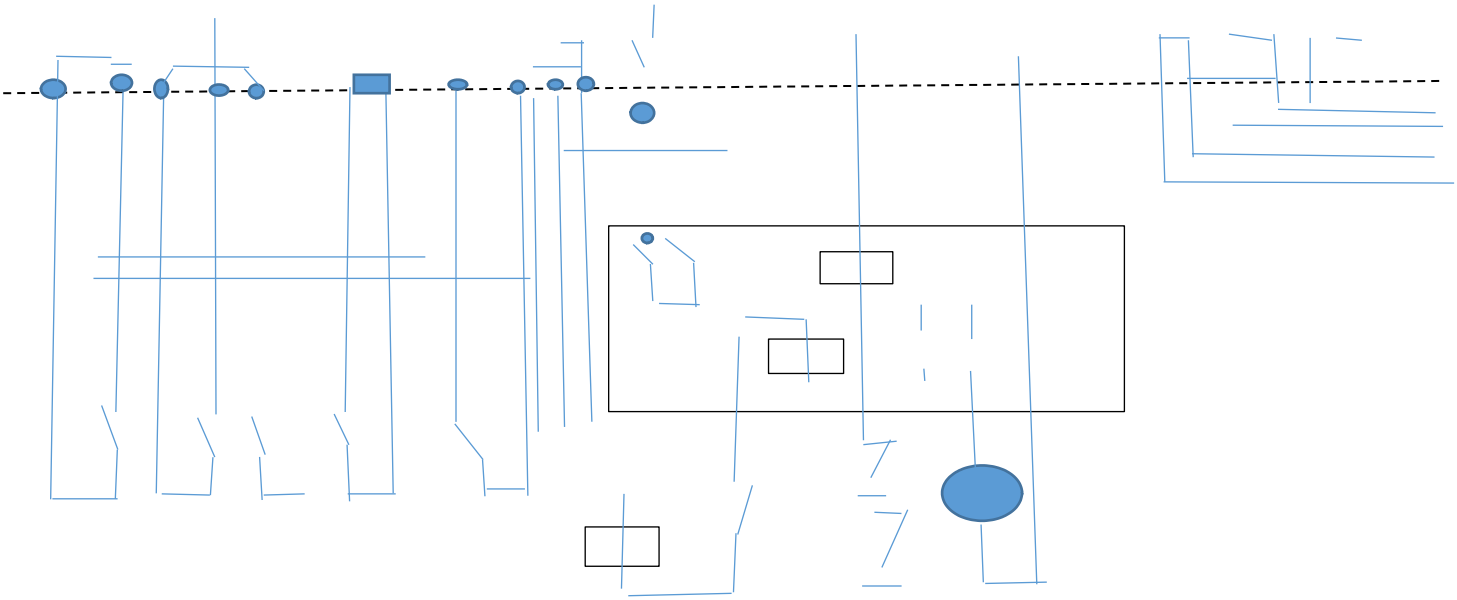
    ActiveWorkbook.Save

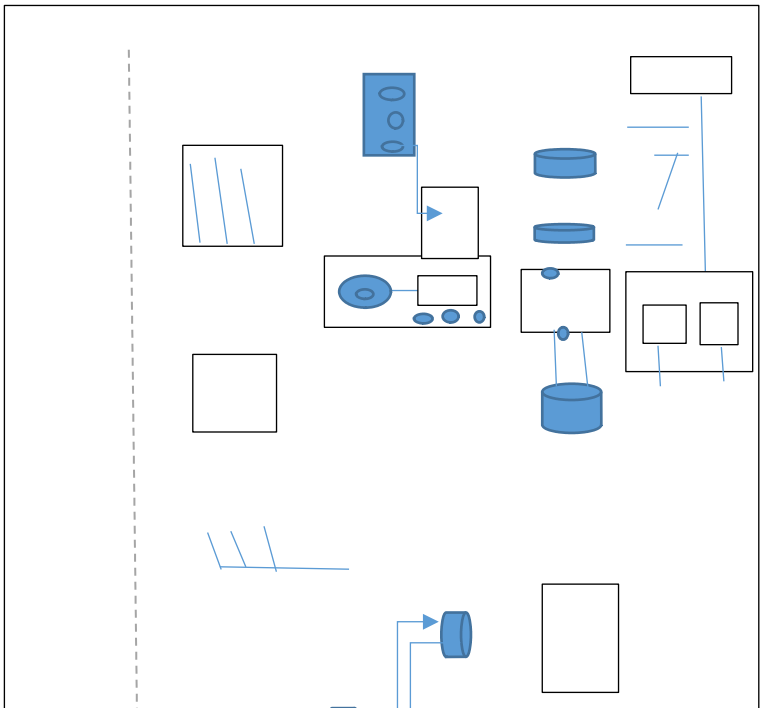
```
    Range("B34").Select
    ActiveSheet.Paste
    Range("B36:Y63").Select
    ActiveSheet.ListObjects.Add(xlSrcRange, Range("$B$36:$Y$63"), , xlNo).Name =
_
       "Table16"
    Range("Table16[#All]").Select
    ActiveWindow.ScrollRow = 31
    ActiveWindow.ScrollRow = 30
    ActiveWindow.ScrollRow = 29
    ActiveWindow.ScrollRow = 28
    ActiveWindow.ScrollRow = 27
    ActiveWindow.ScrollRow = 26
    Range("O32").Select
    ActiveWindow.ScrollColumn = 1
    Range("B38").Select
    ActiveCell.FormulaR1C1 = "7"
    Range("C38").Select
    ActiveCell.FormulaR1C1 = "8"
    Range("D38").Select
    ActiveCell.FormulaR1C1 = "9"
    Range("E38").Select
    ActiveWorkbook.Save
End Sub


Sub Macro2()
'
' Macro2 Macro
' text field  buttons for the number  operator  button for the result  off , clear , back
space  option explicit  public class form 1 dim operand 1 as double dim operad 2 as
```

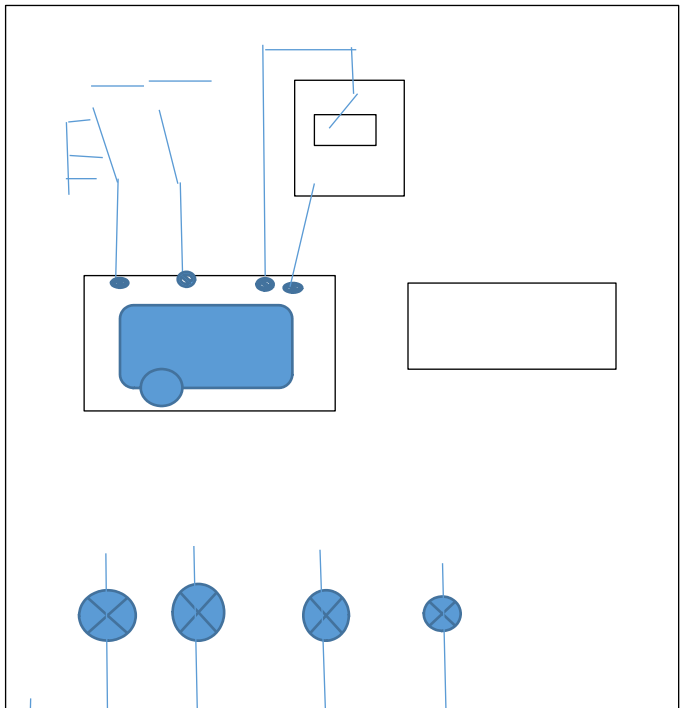
```
double  dim {operator} as string  dim has decimal boolean dim tmp nalue  as
double

'



'

    Application.Run _

        "'Copy of PROJECT DRAWING WORKSHET    TSHINGOMBE DESIGN ANALYSE
ENGIN  Book12.xlsx'!Macro2"

End Sub

Sub Macro3()

'

' Macro3 Macro

' "500000fff03ff000018000a0410000d00095000001"  string .cmd=" ";
cmd=cmd+"5000";//sub head (not) cmd=cmd+"00"//network number
cmd+cmd+"ff";//plc number cmd+""03ff";//demand object module i/o.number
cmd=cmd+"001c";length demand data  cmd=cmd+cmd+000A";cpu in

'
```

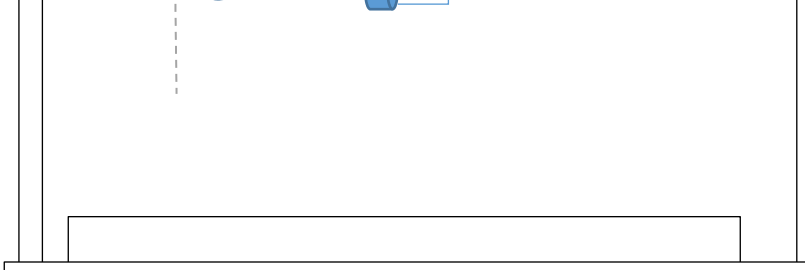

Generation station , generation set up transform, transmission , transmission customer 138kvor , submission , submission 26kv and 69kv , primary customer 13kv, and 4kv, secondary customer

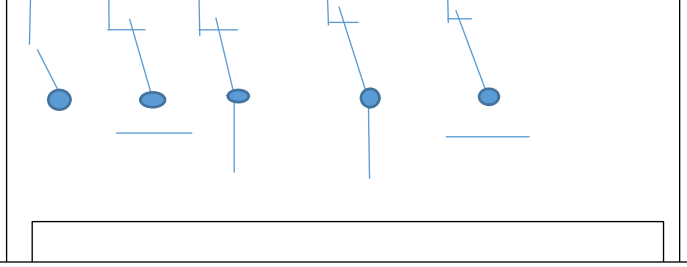


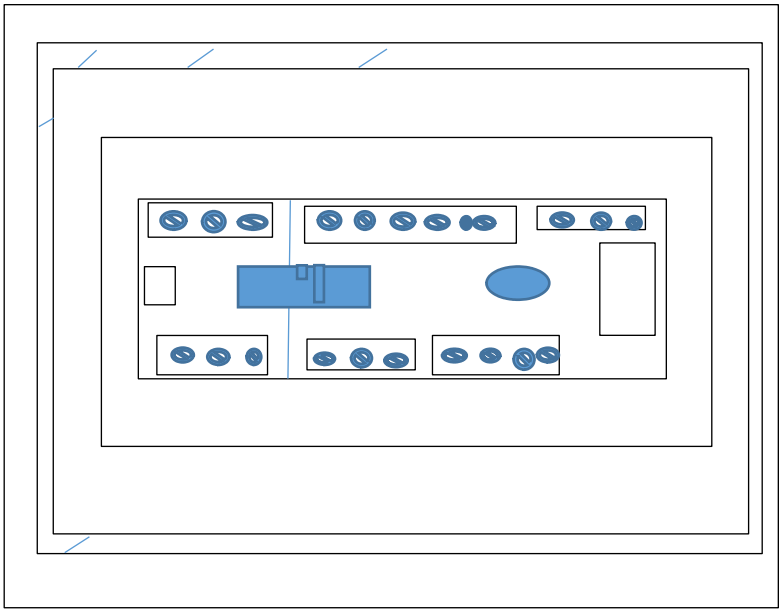


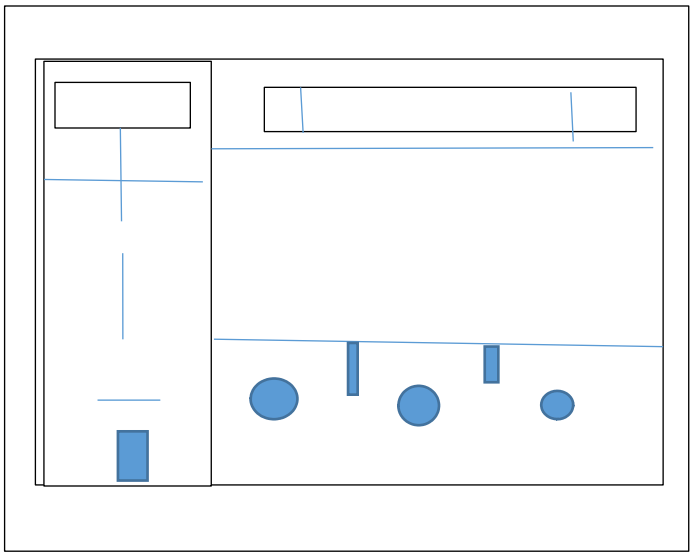


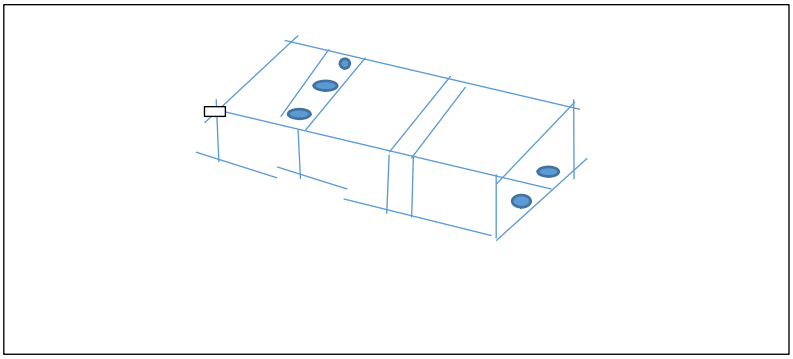


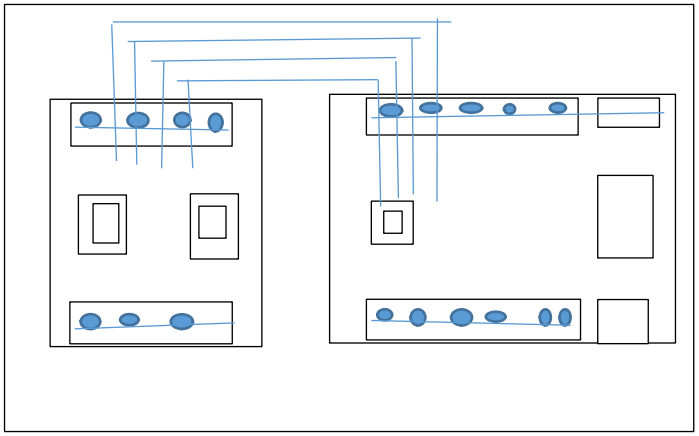


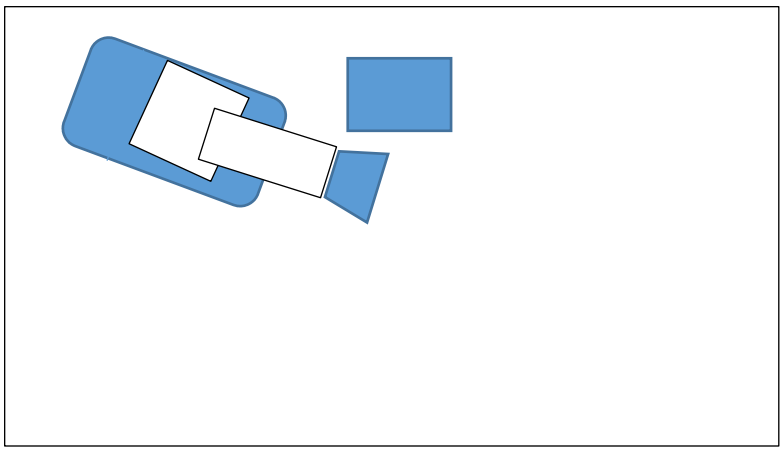


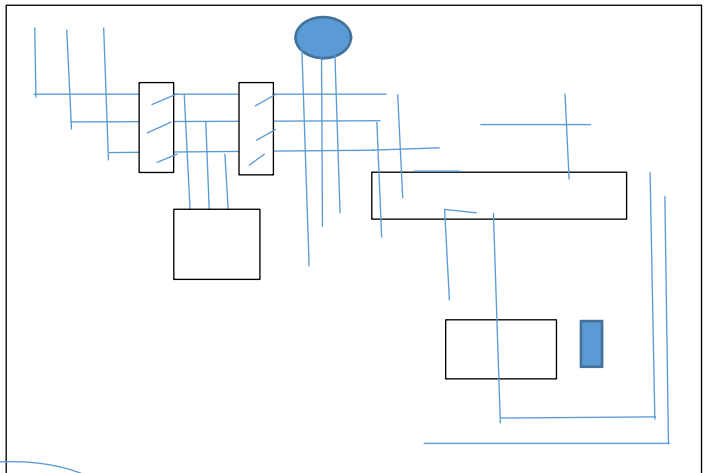


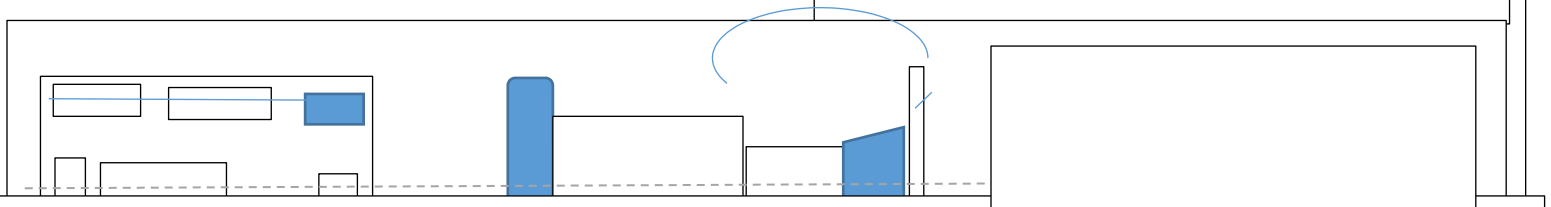


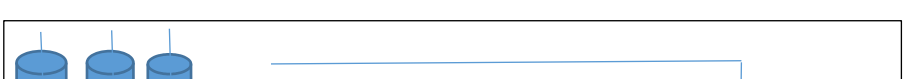


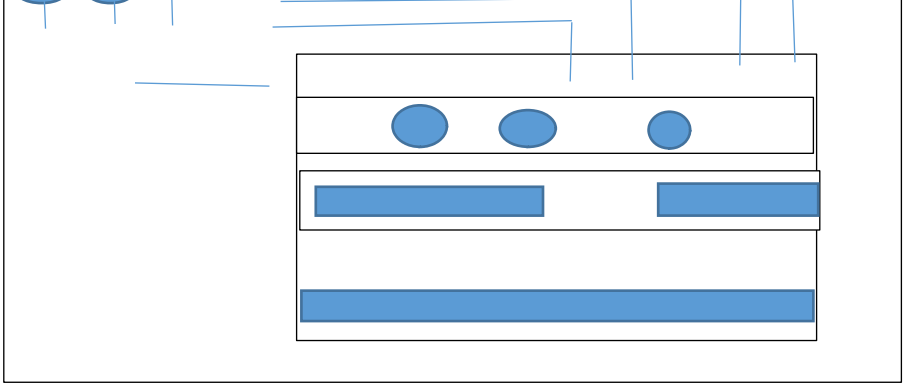


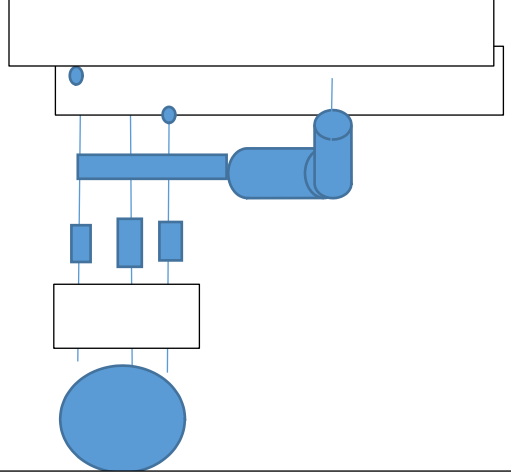


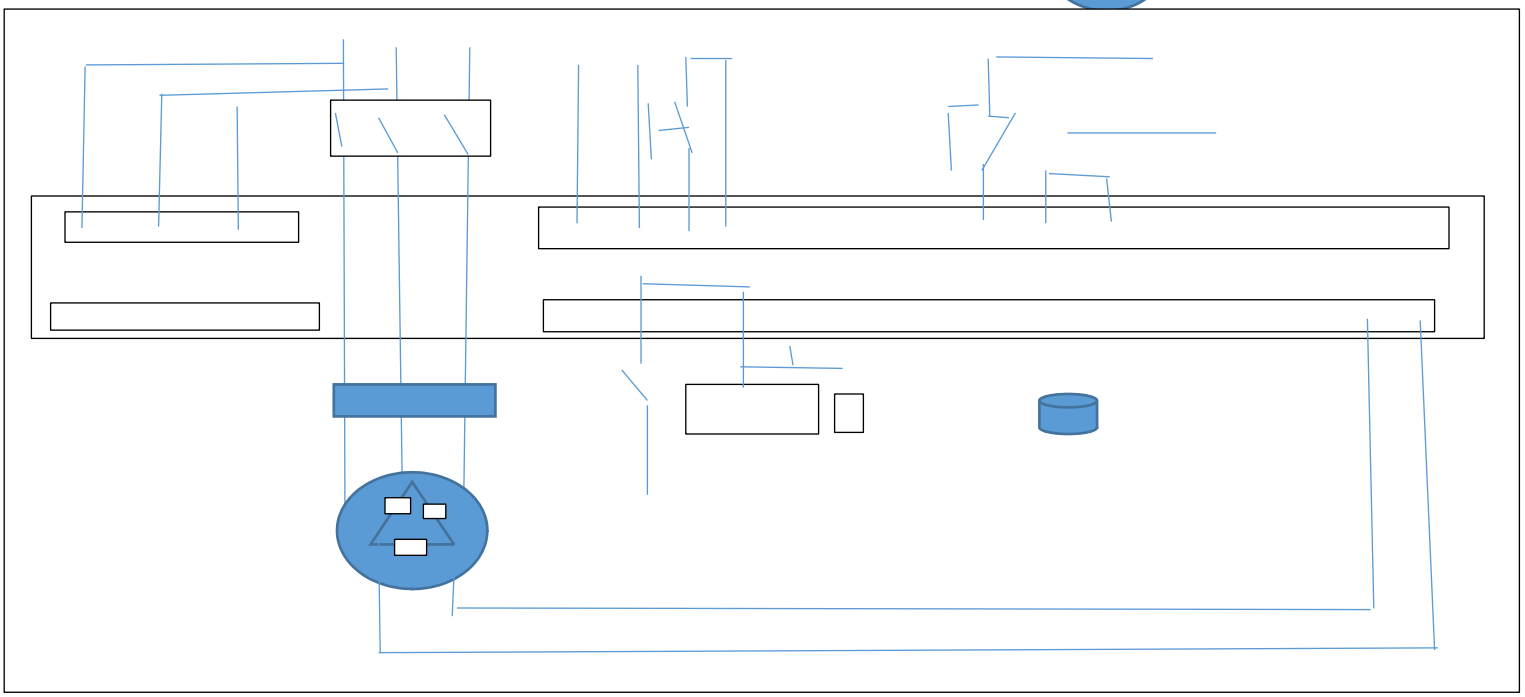


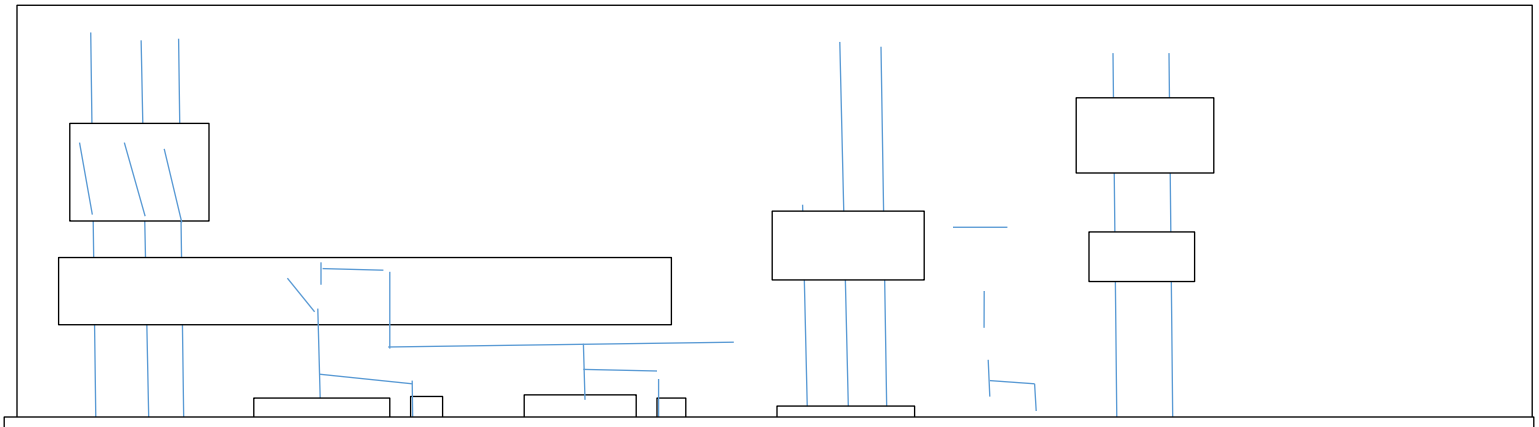


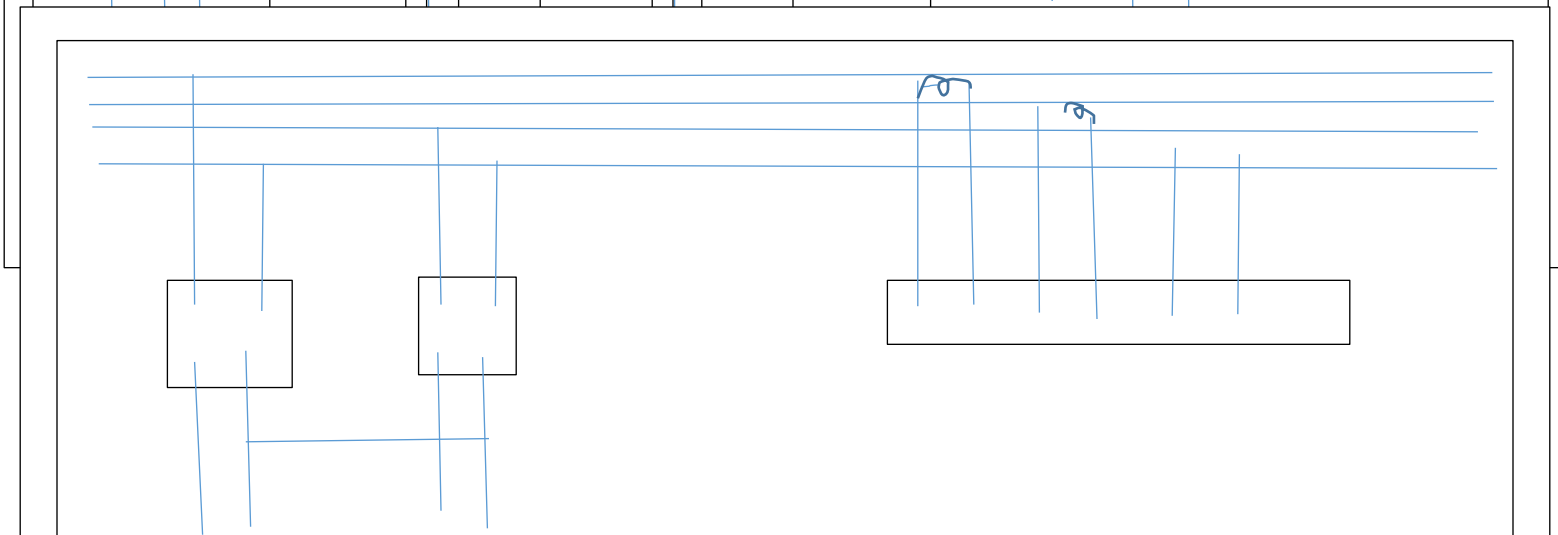












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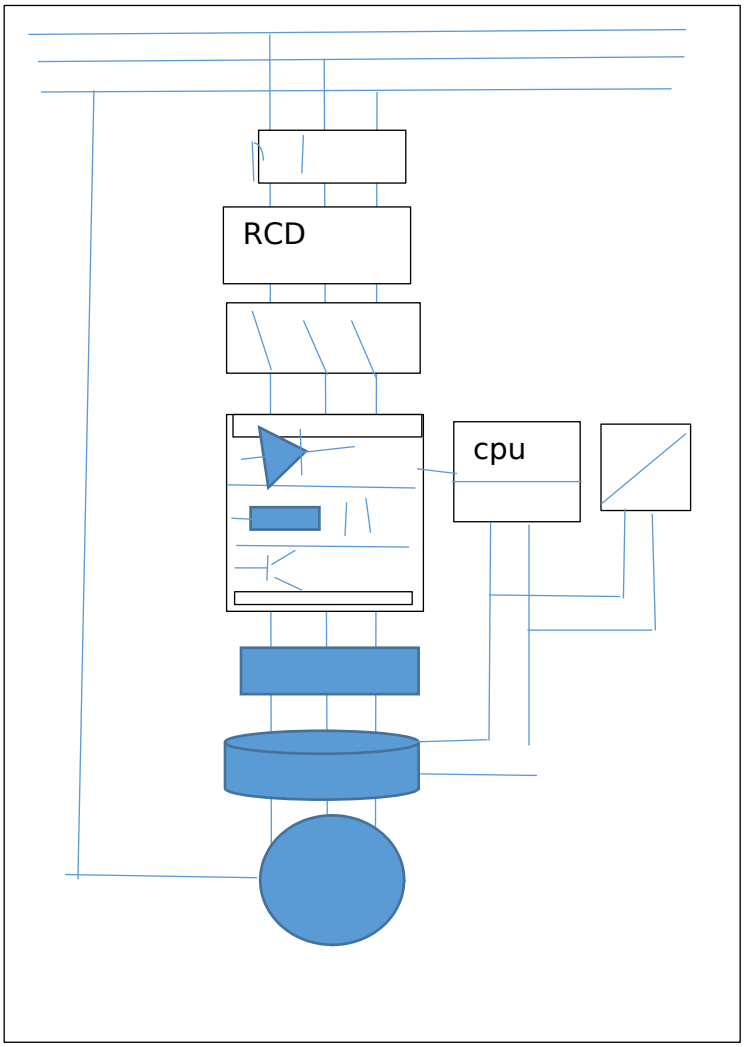
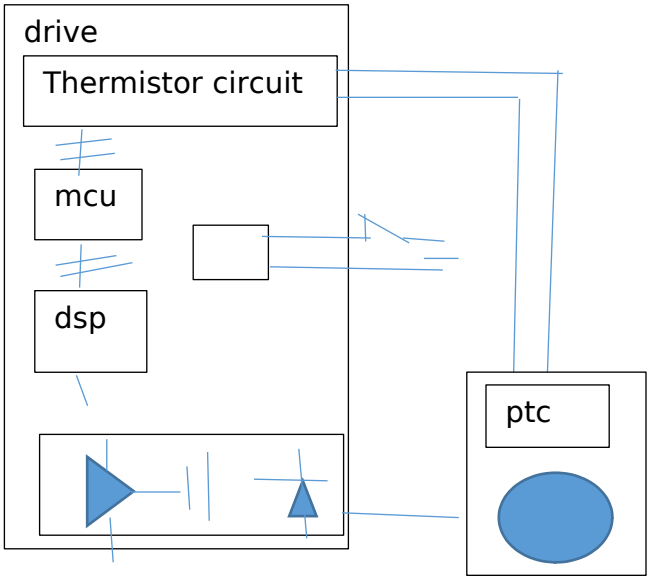
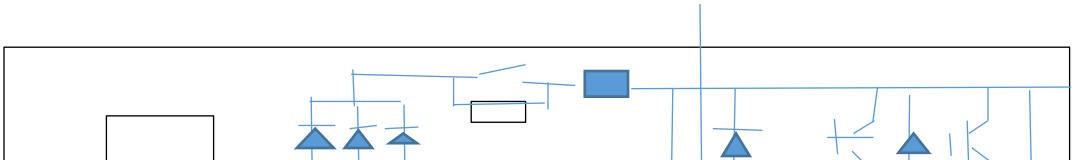


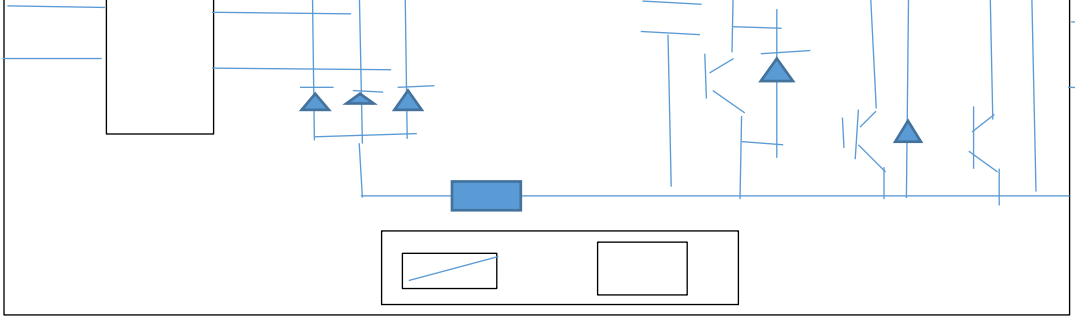
Ister , motor and application, motor and application , item ,

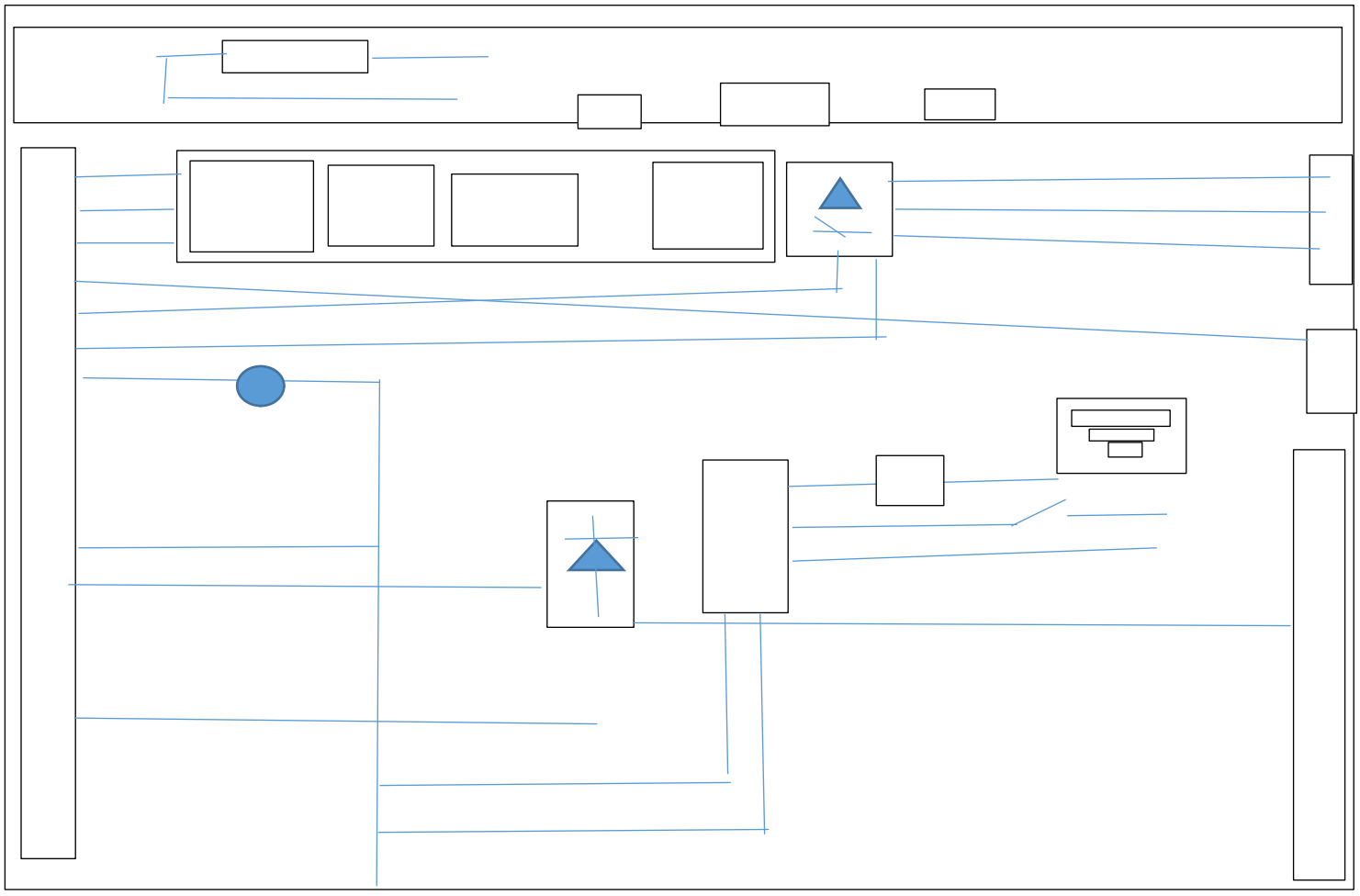
Power grid , configuration input output voltage , breakers , fuse , cable, cross. Section .

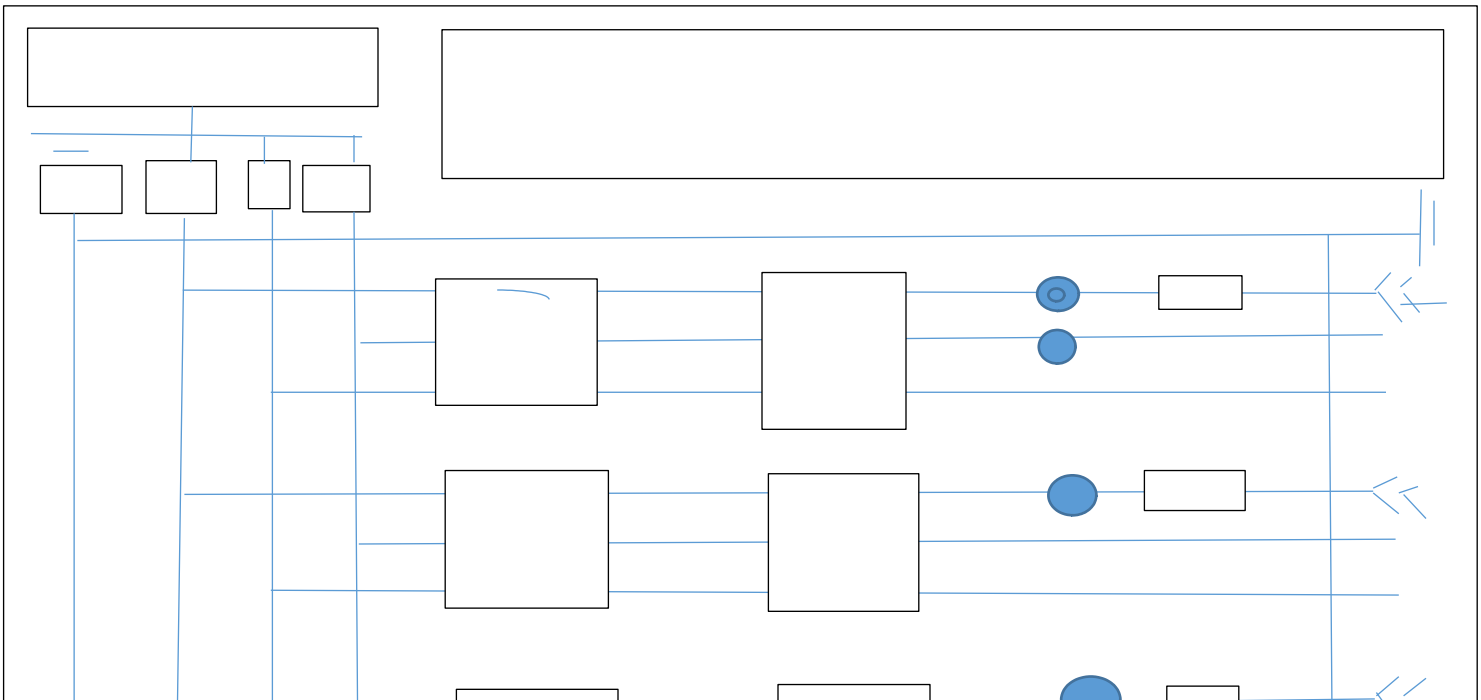
- Protection person, and animals, input disconector frequence disconnect , inverter mounting , output reactor, dv/dt filter , motor

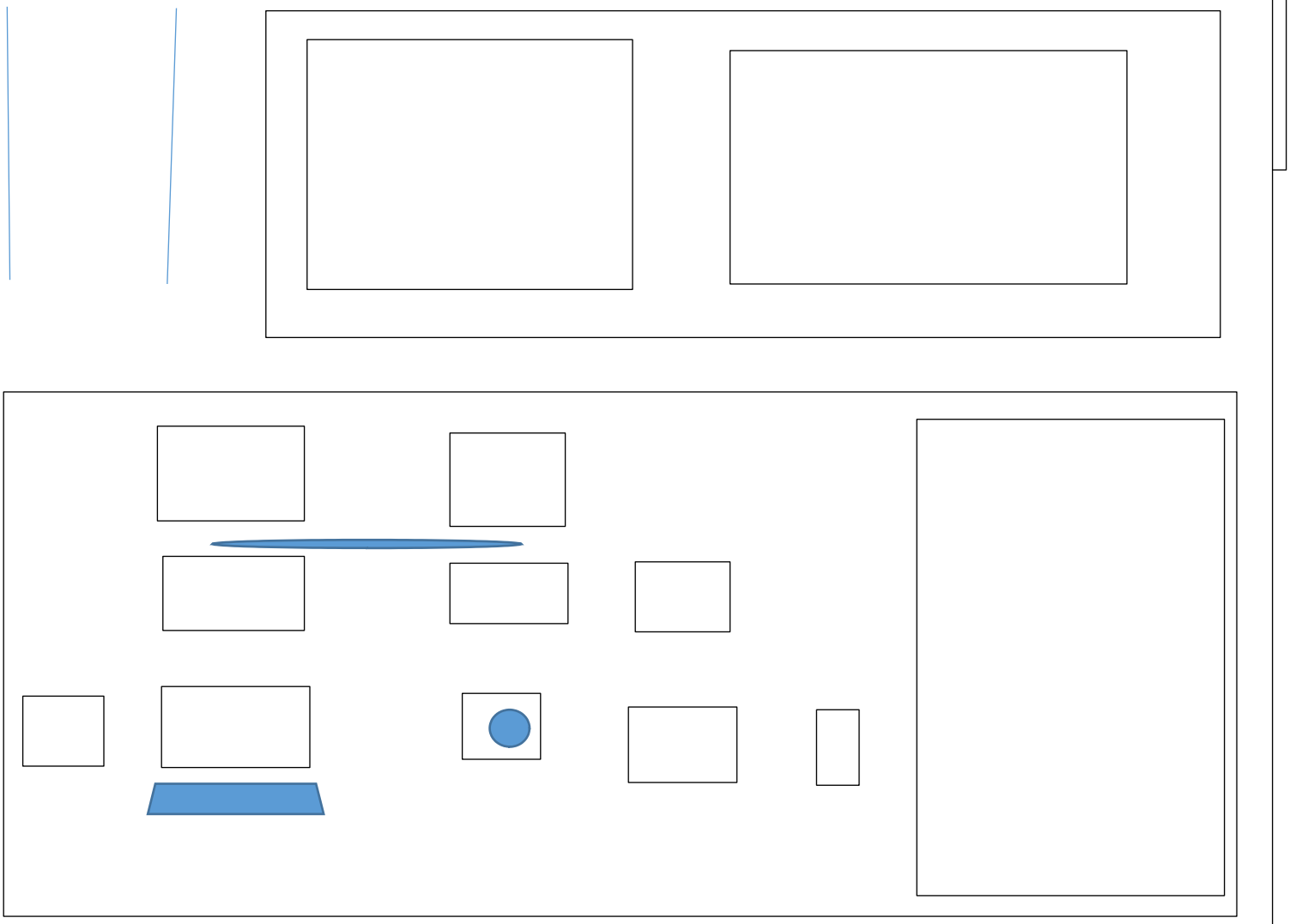


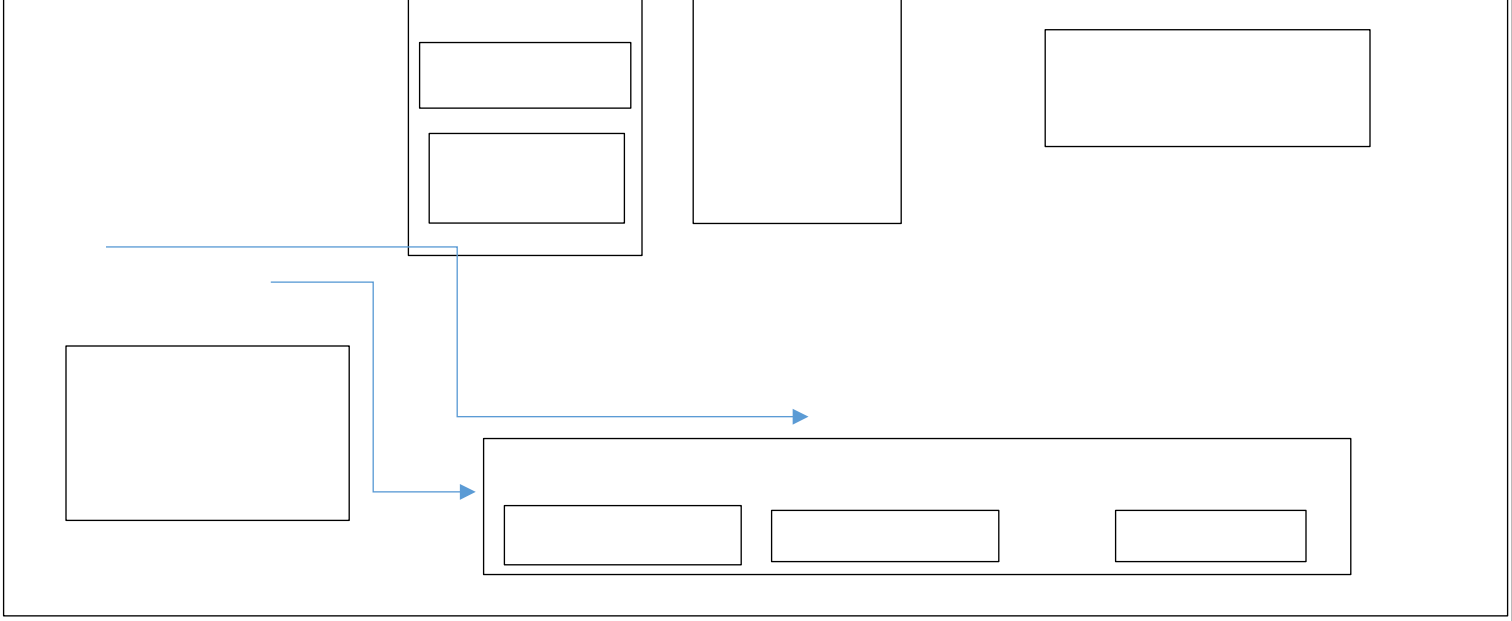


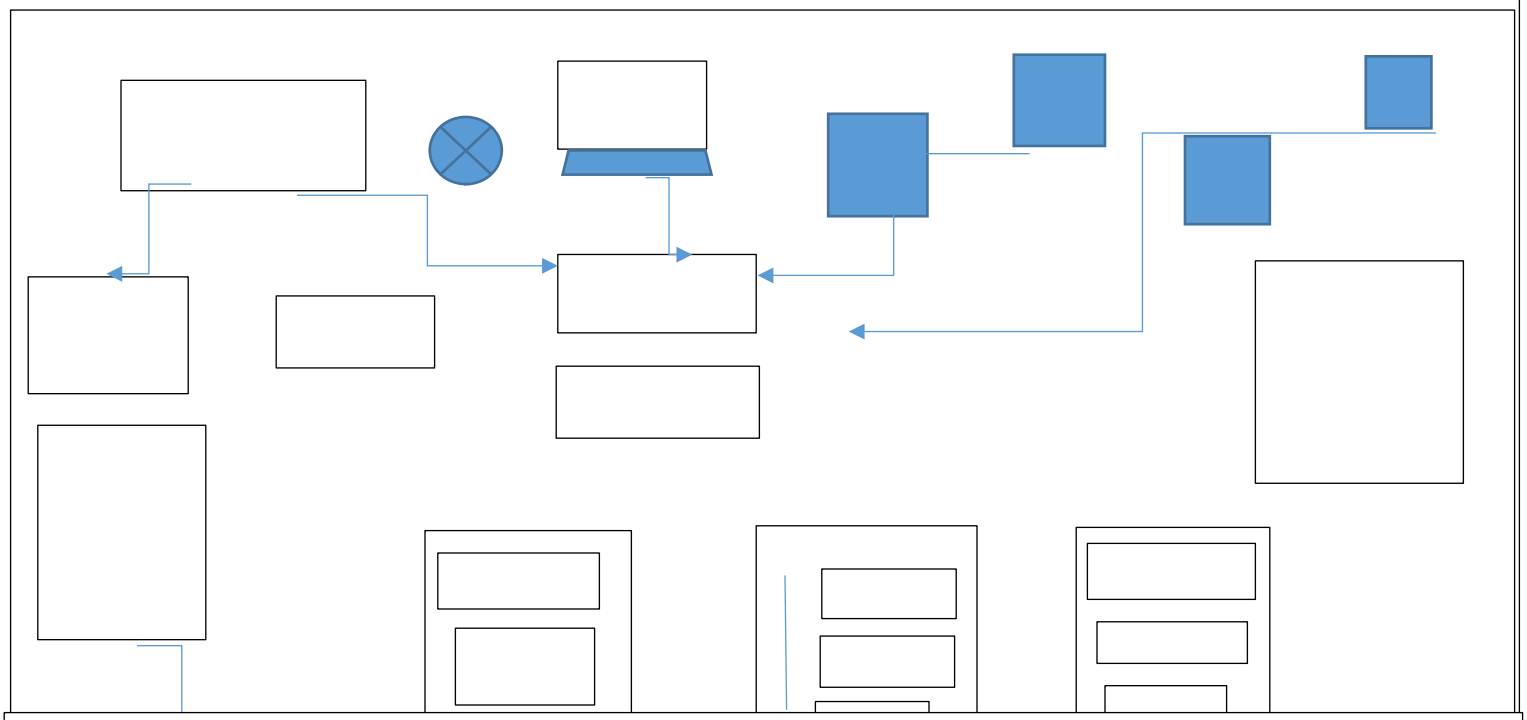


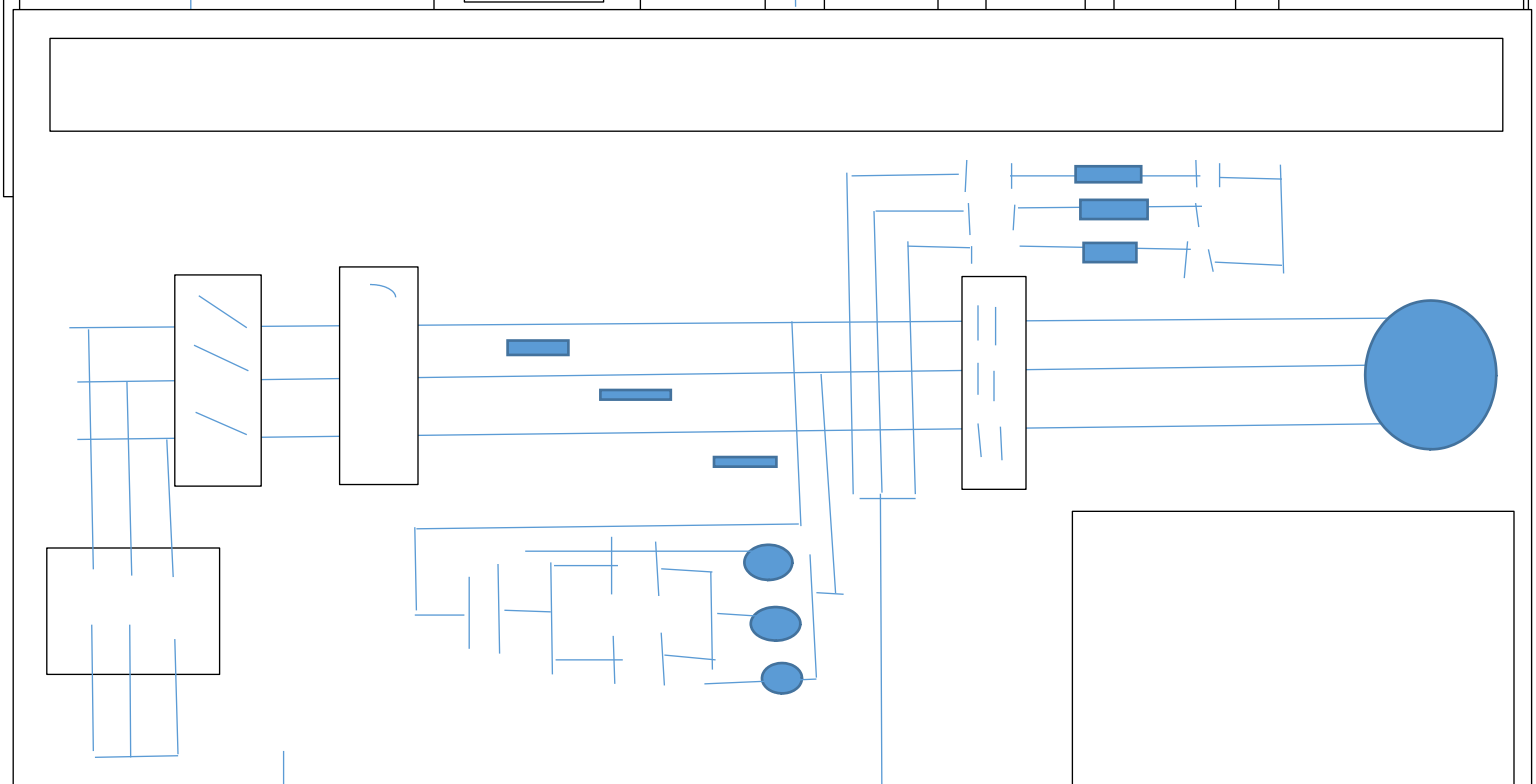


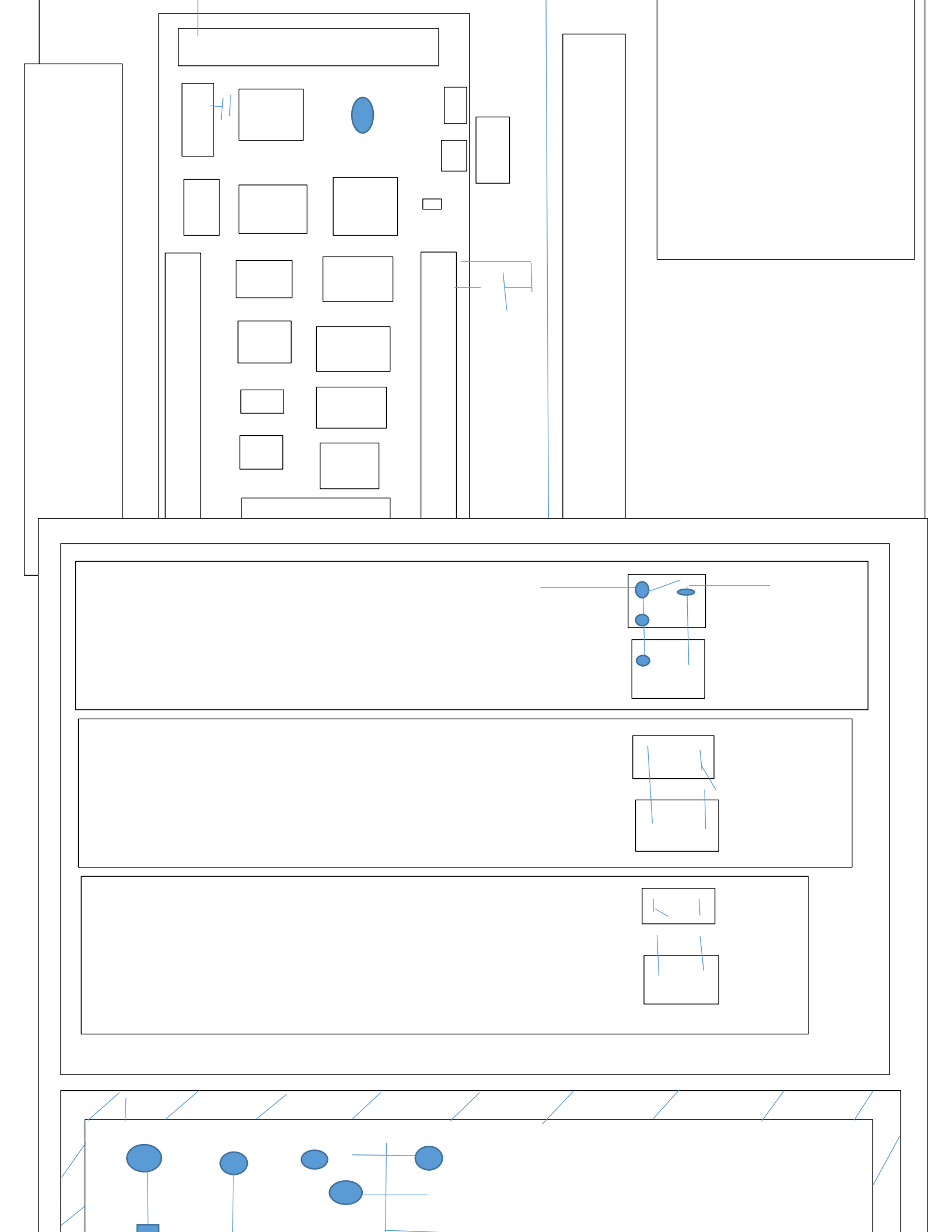


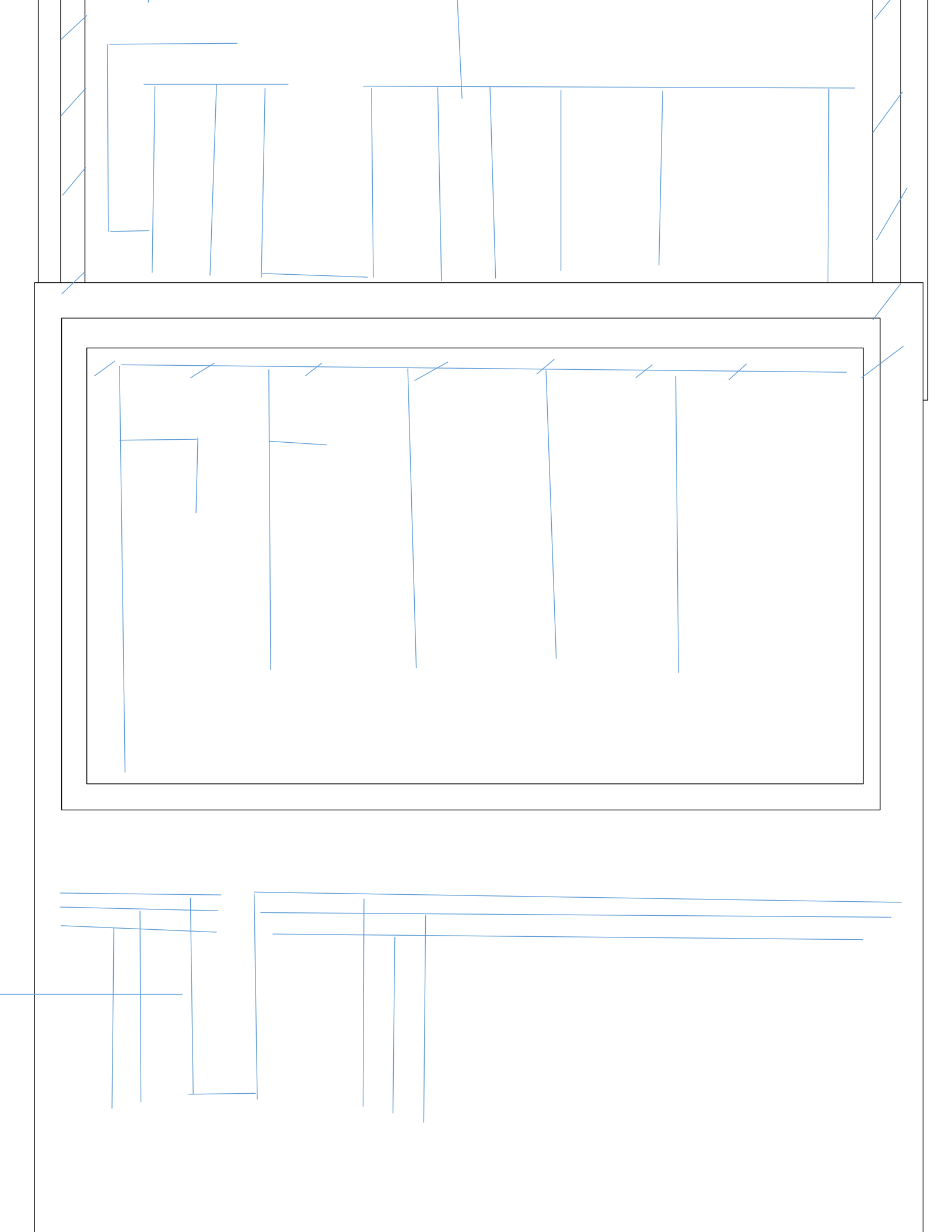


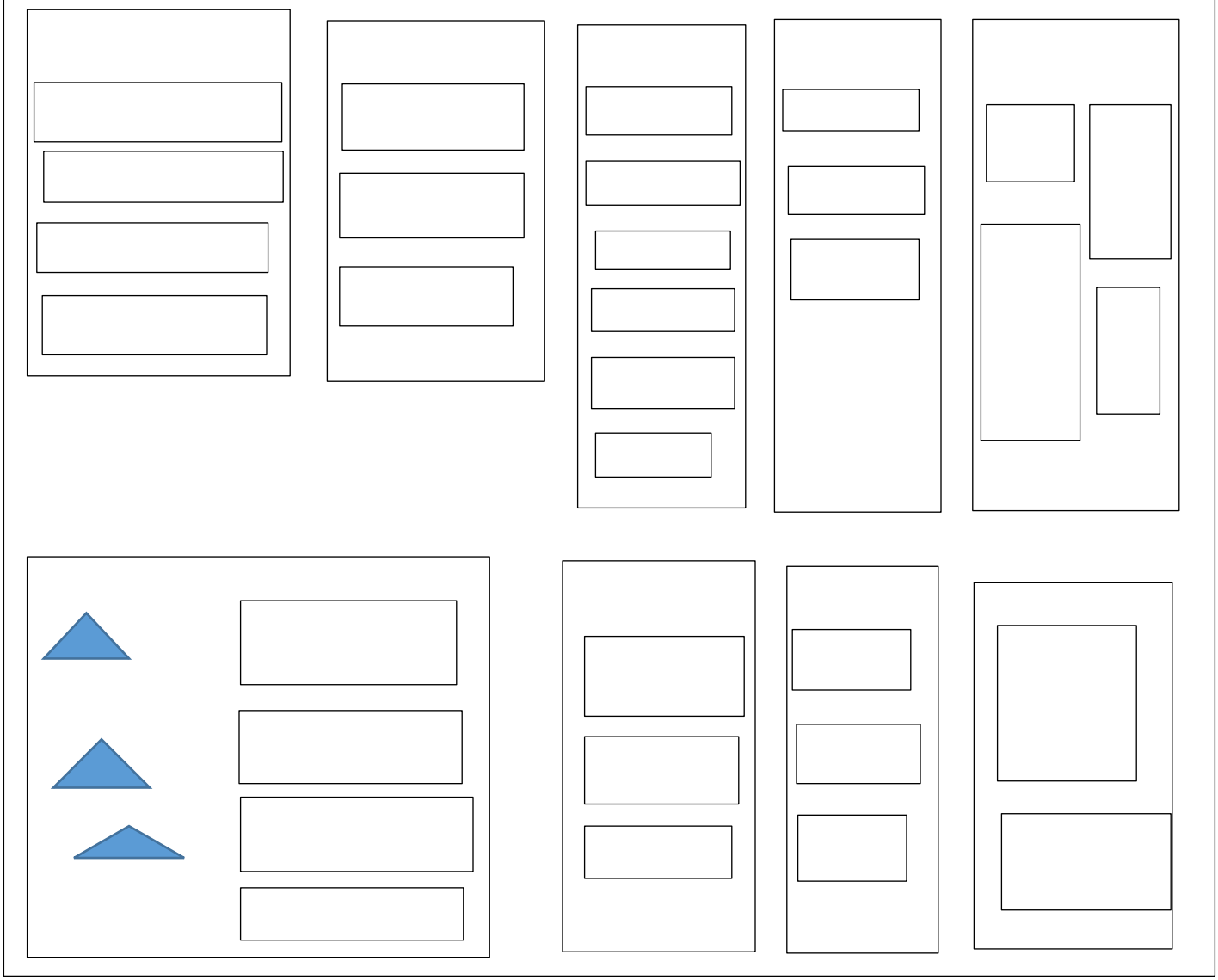


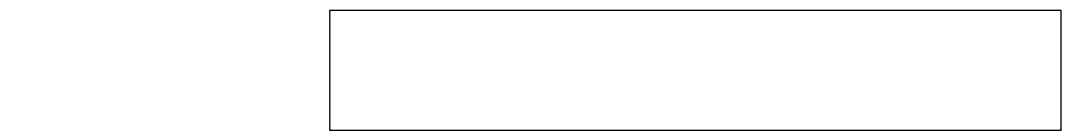


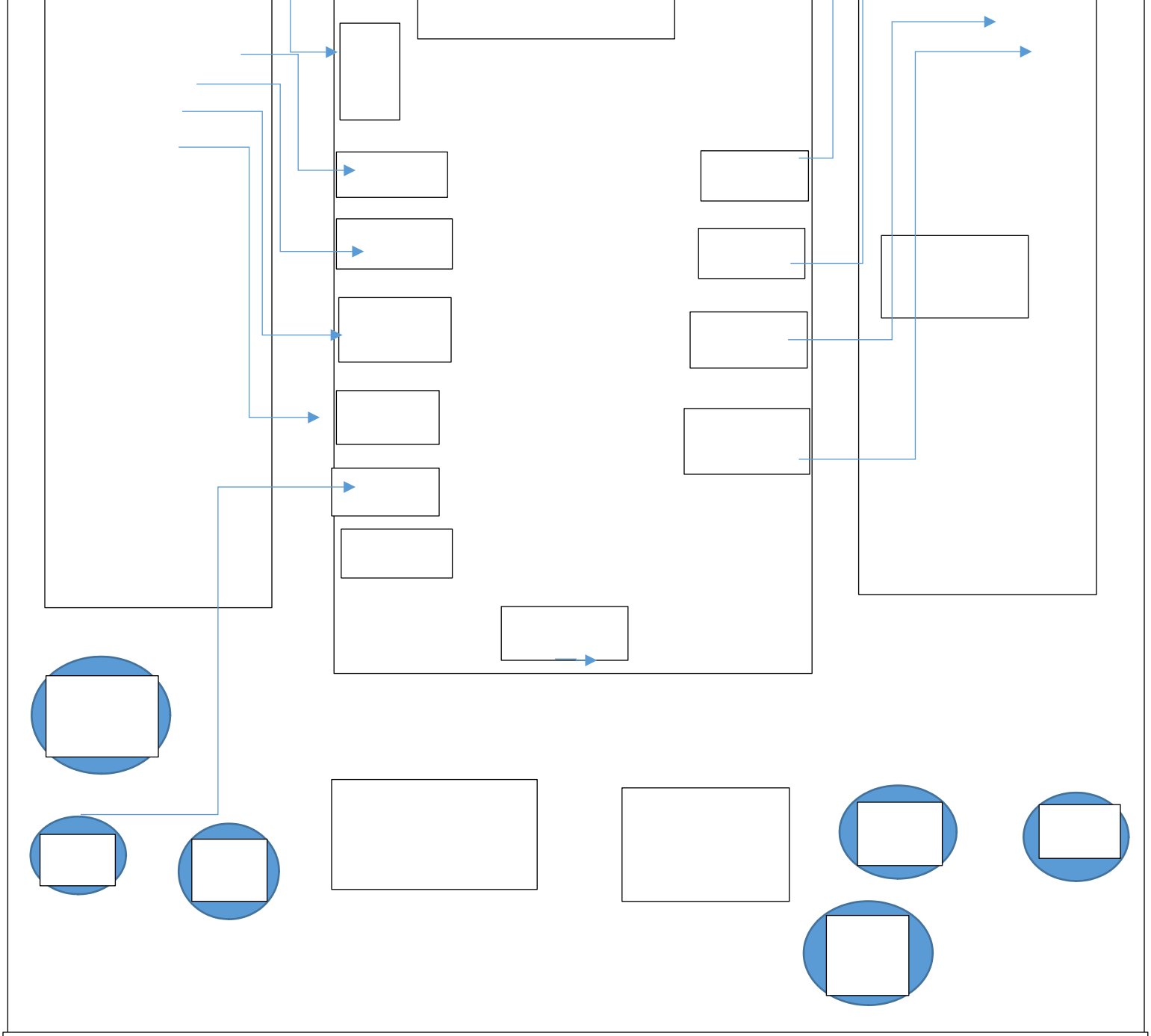


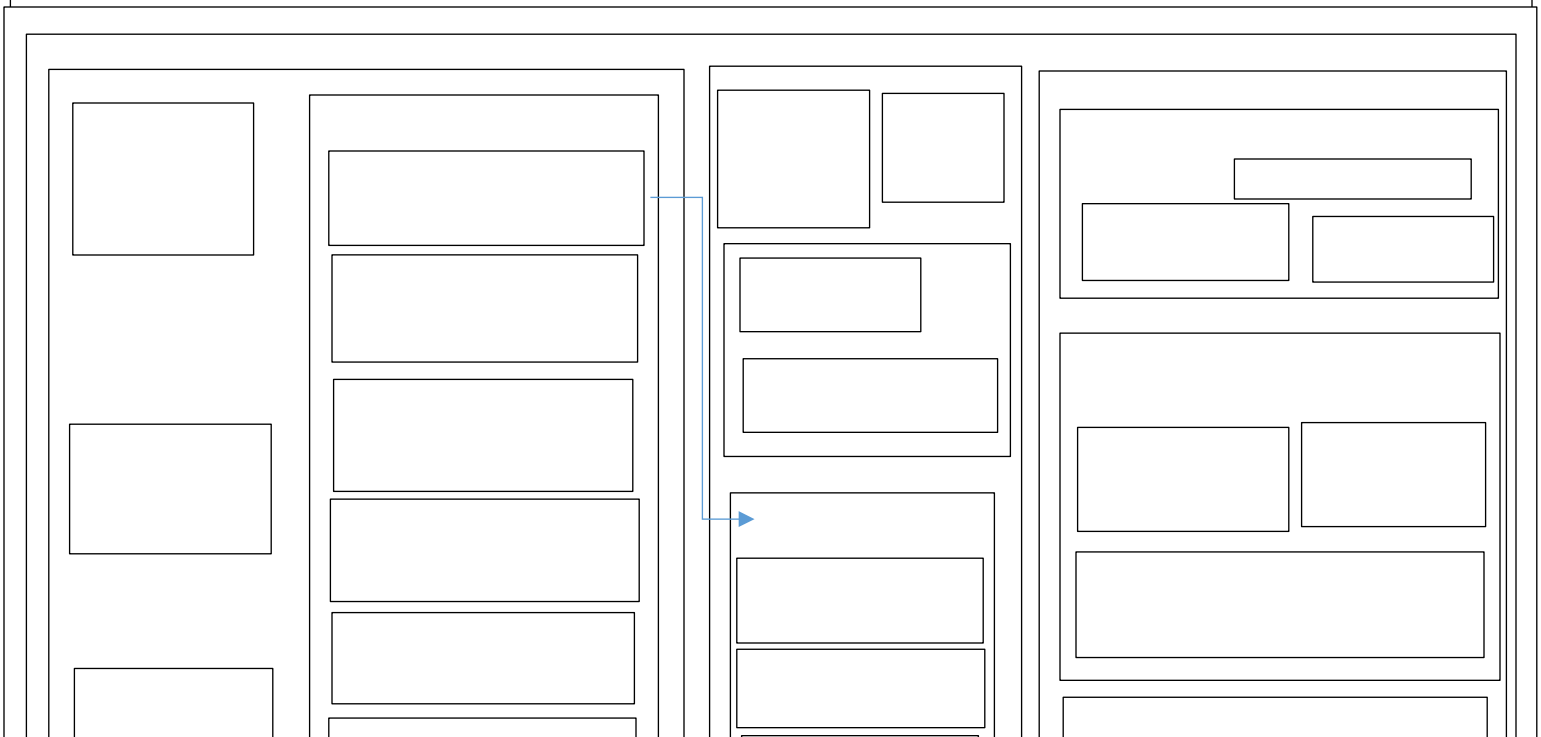


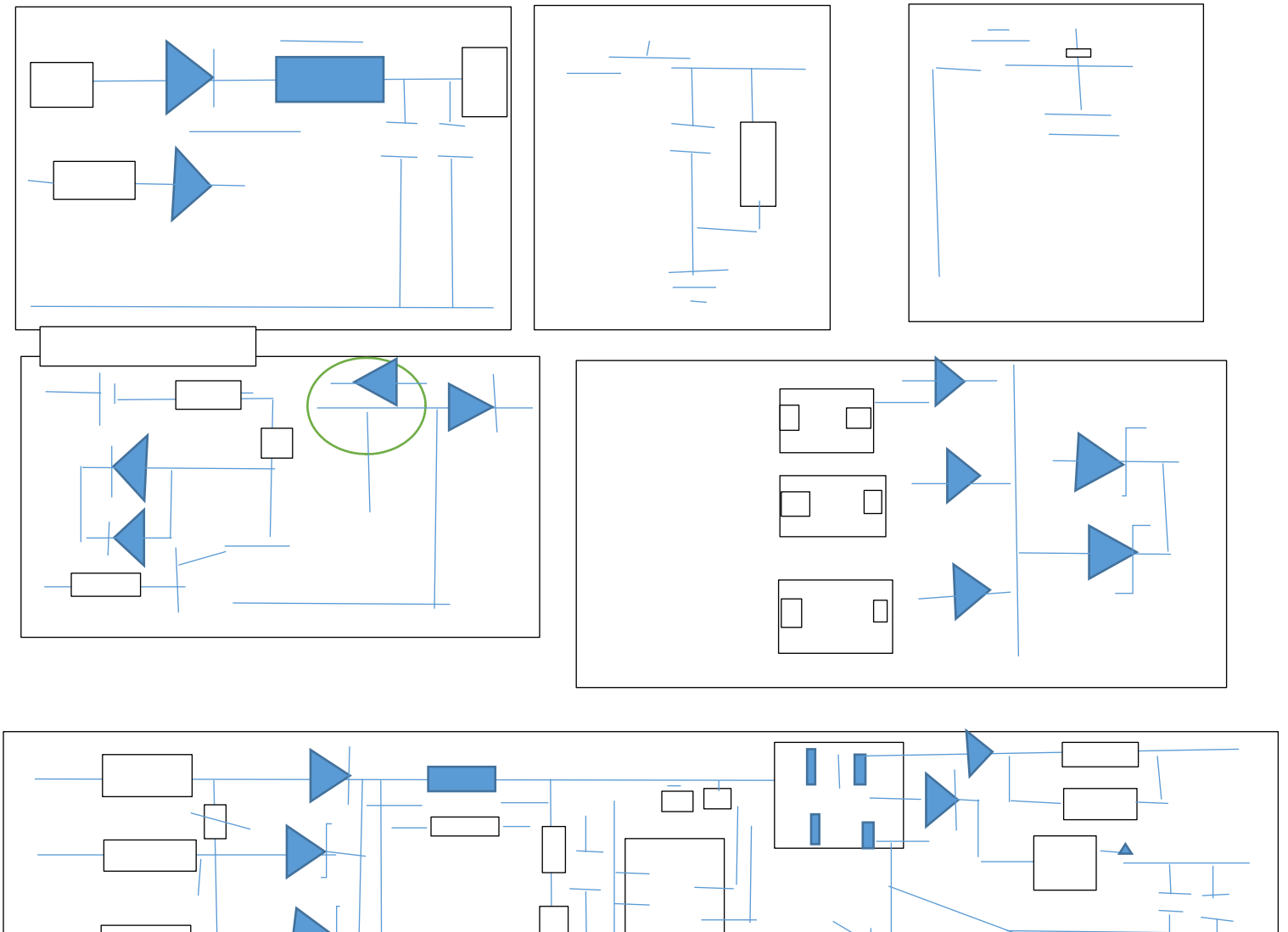


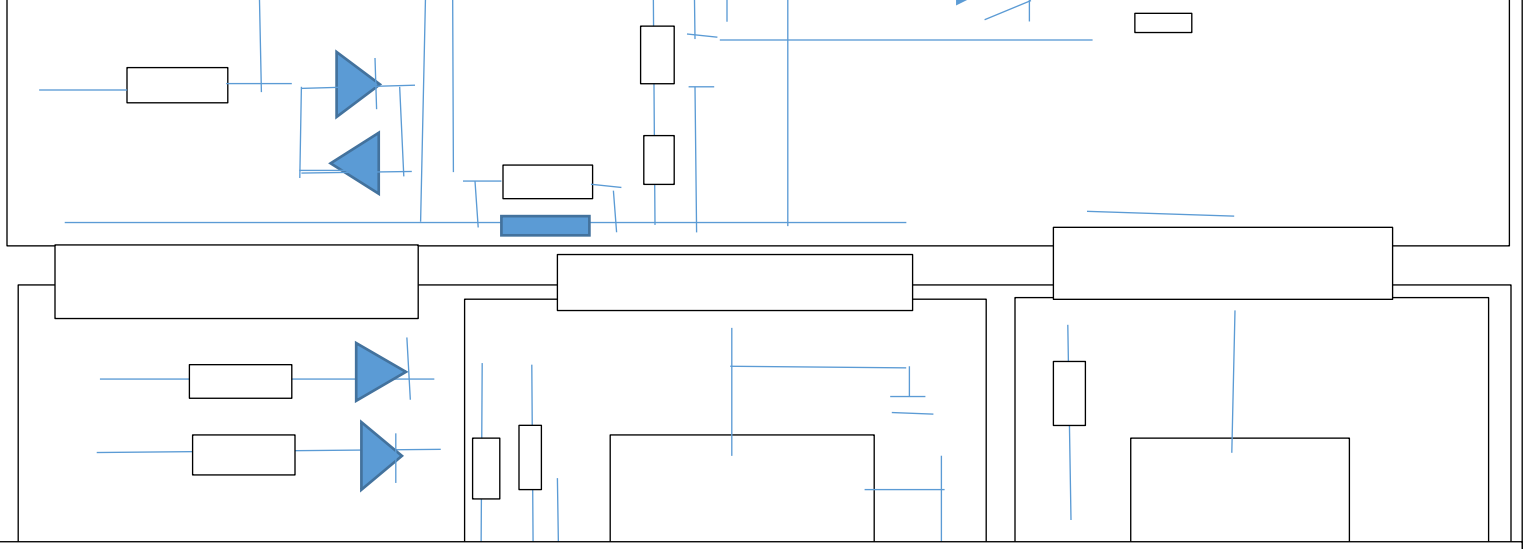


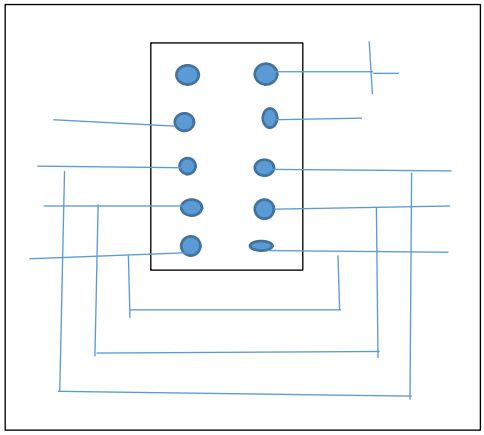


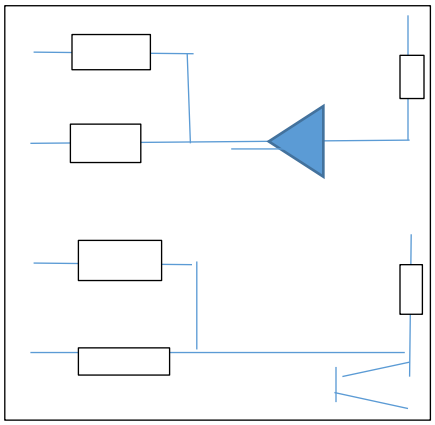


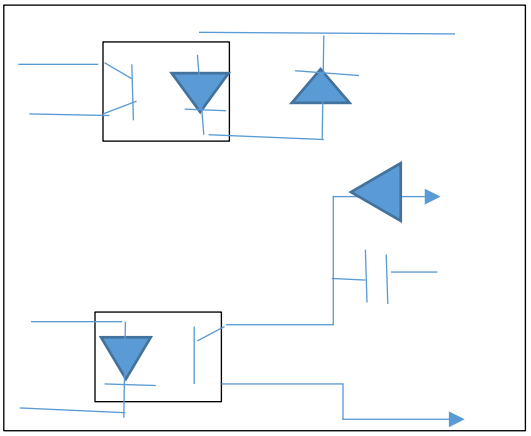


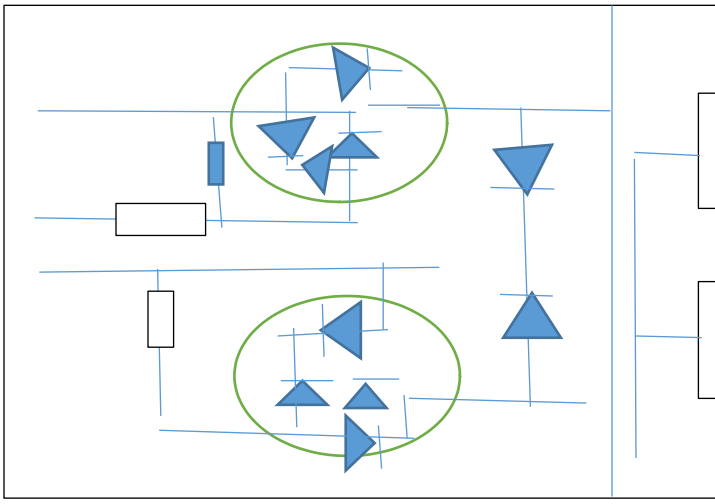


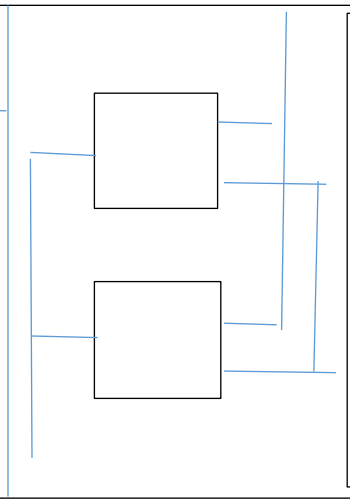


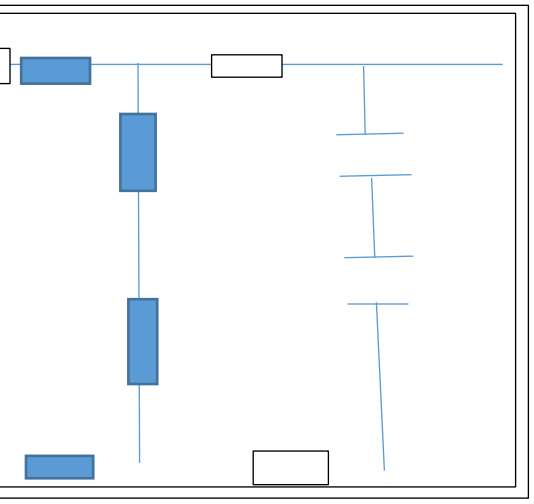


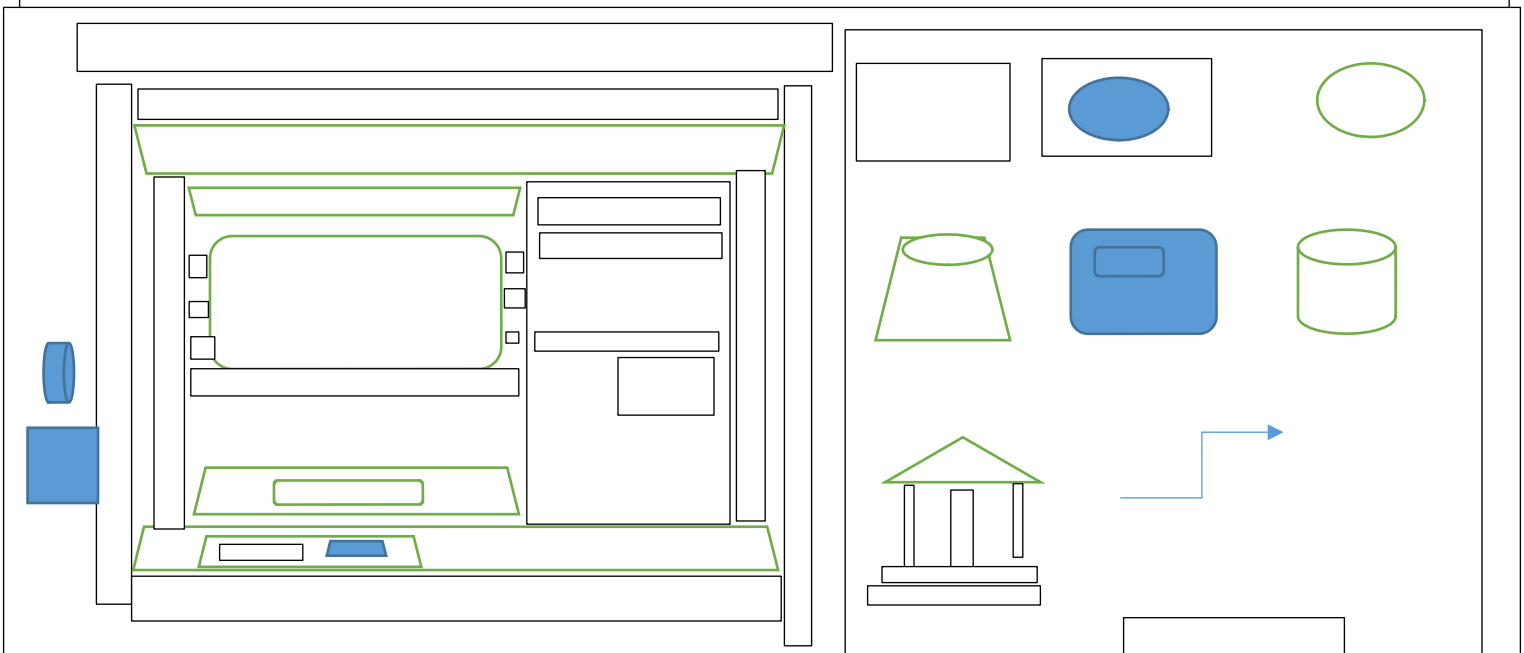


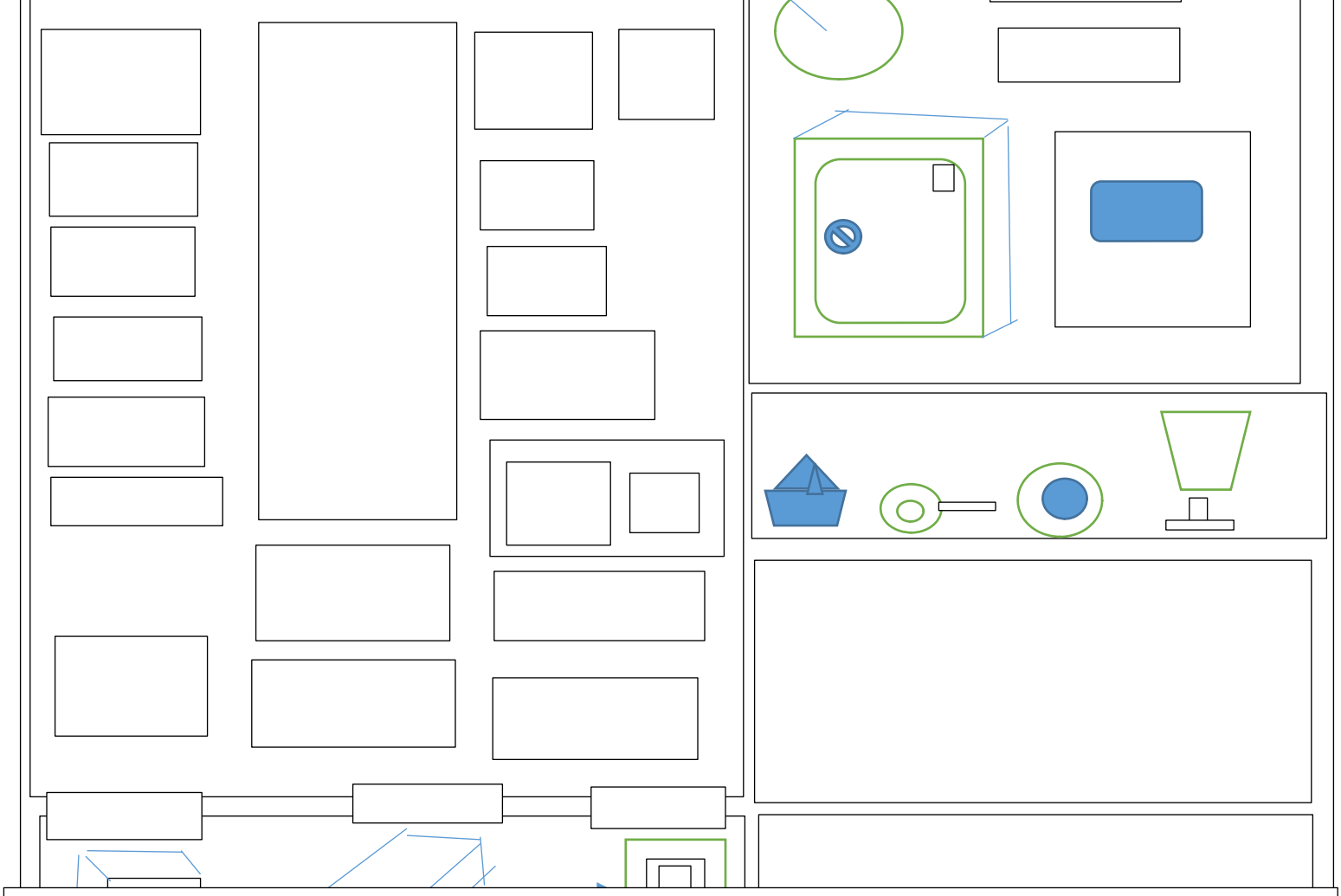


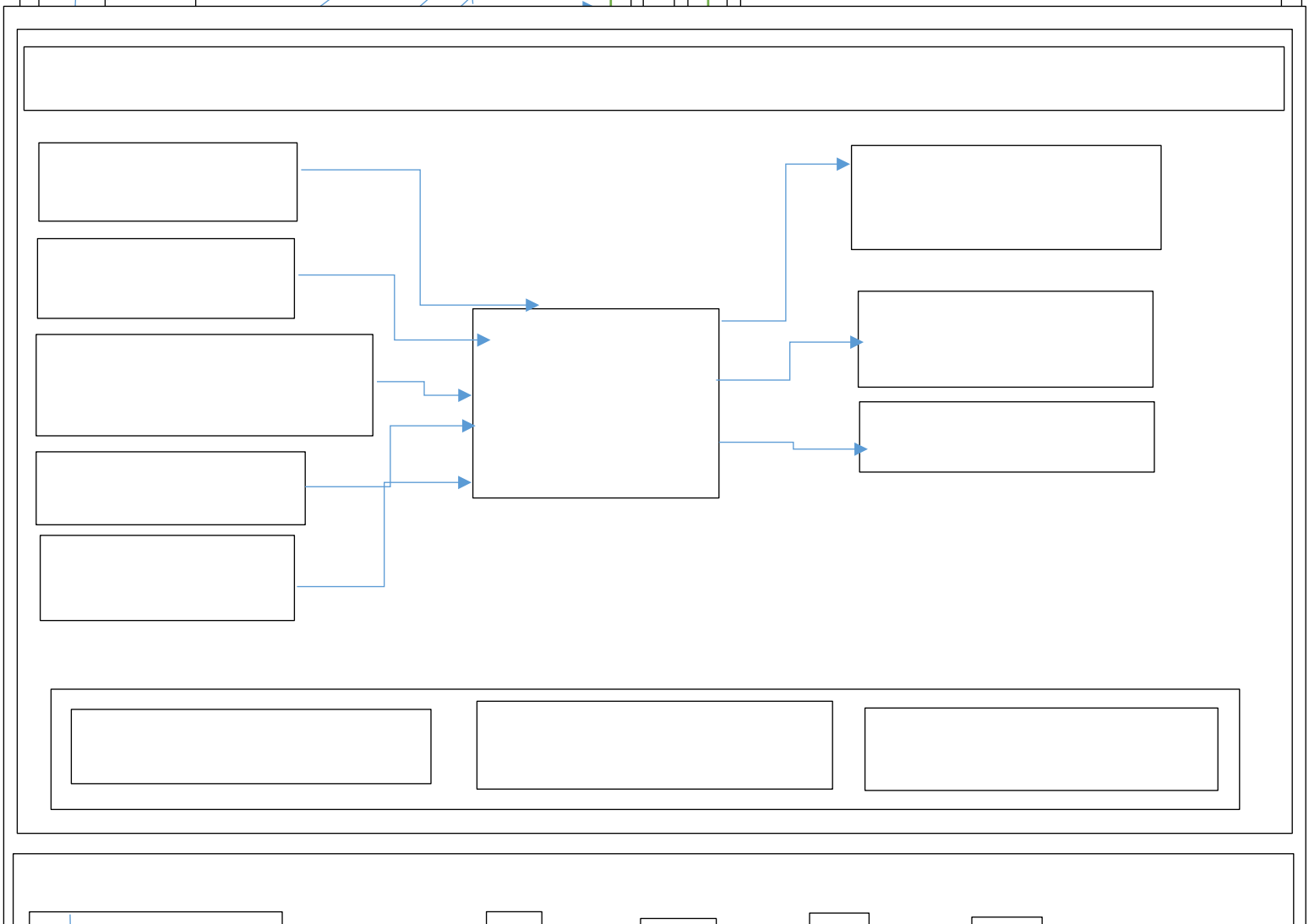


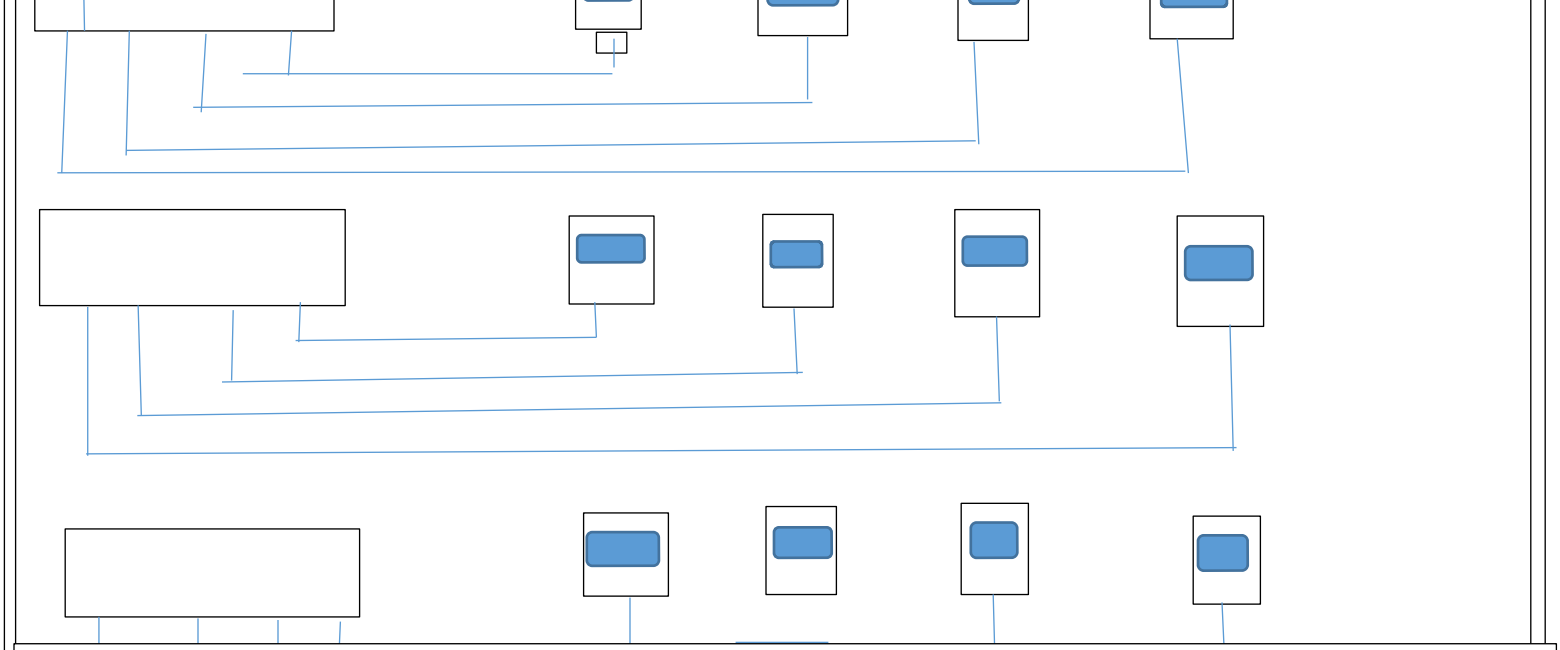


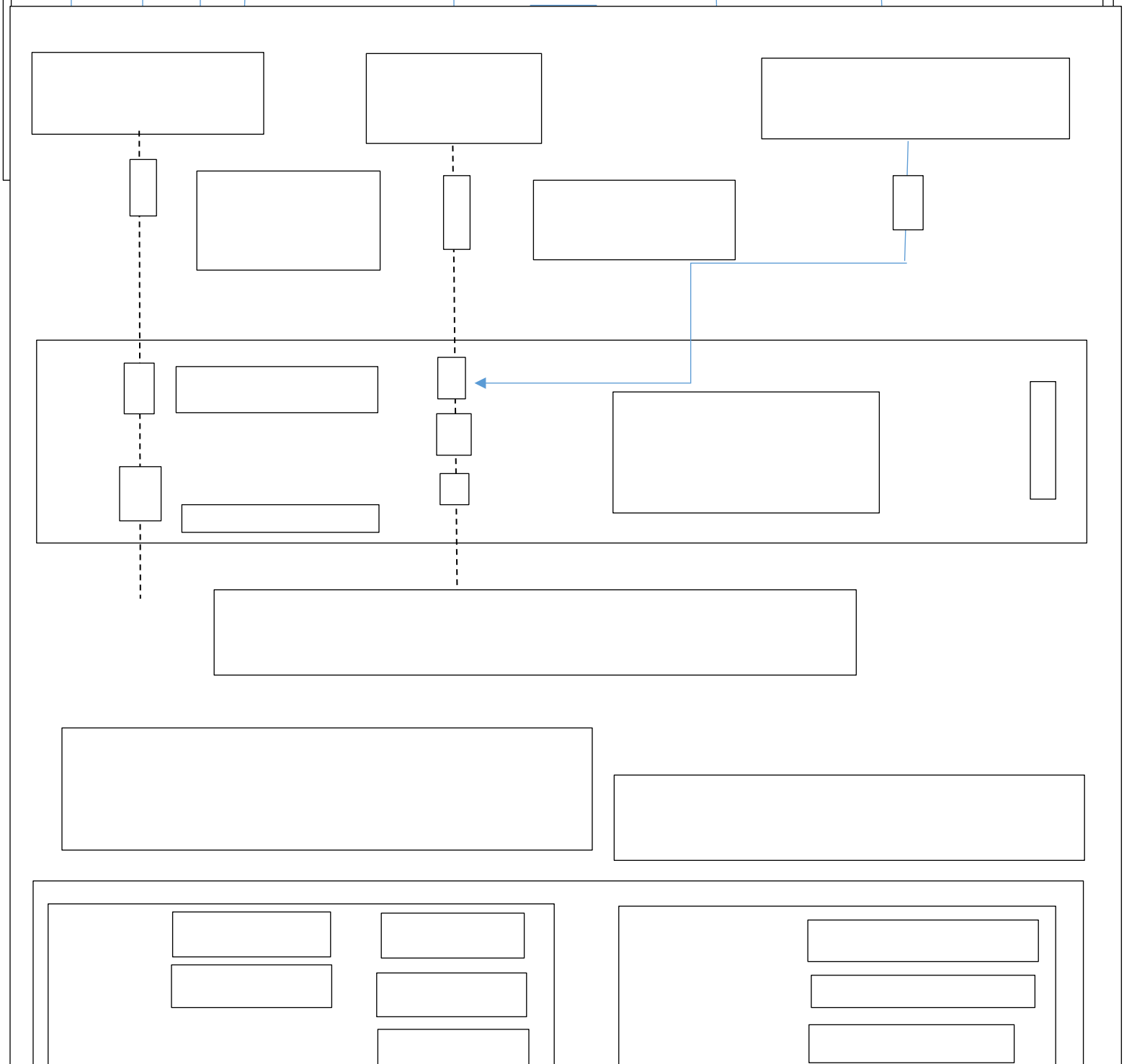


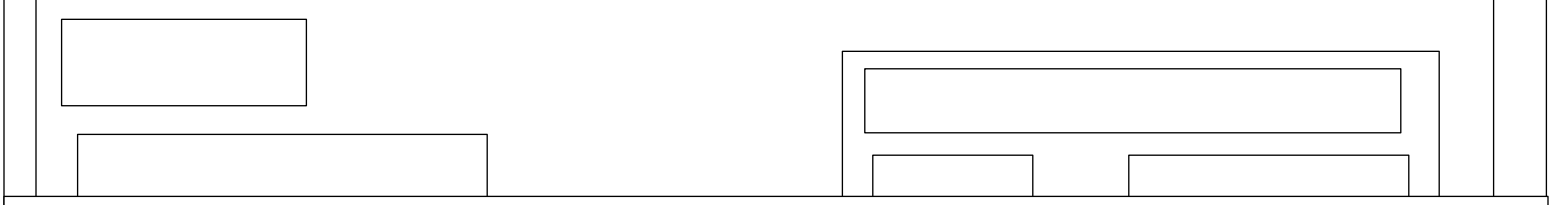


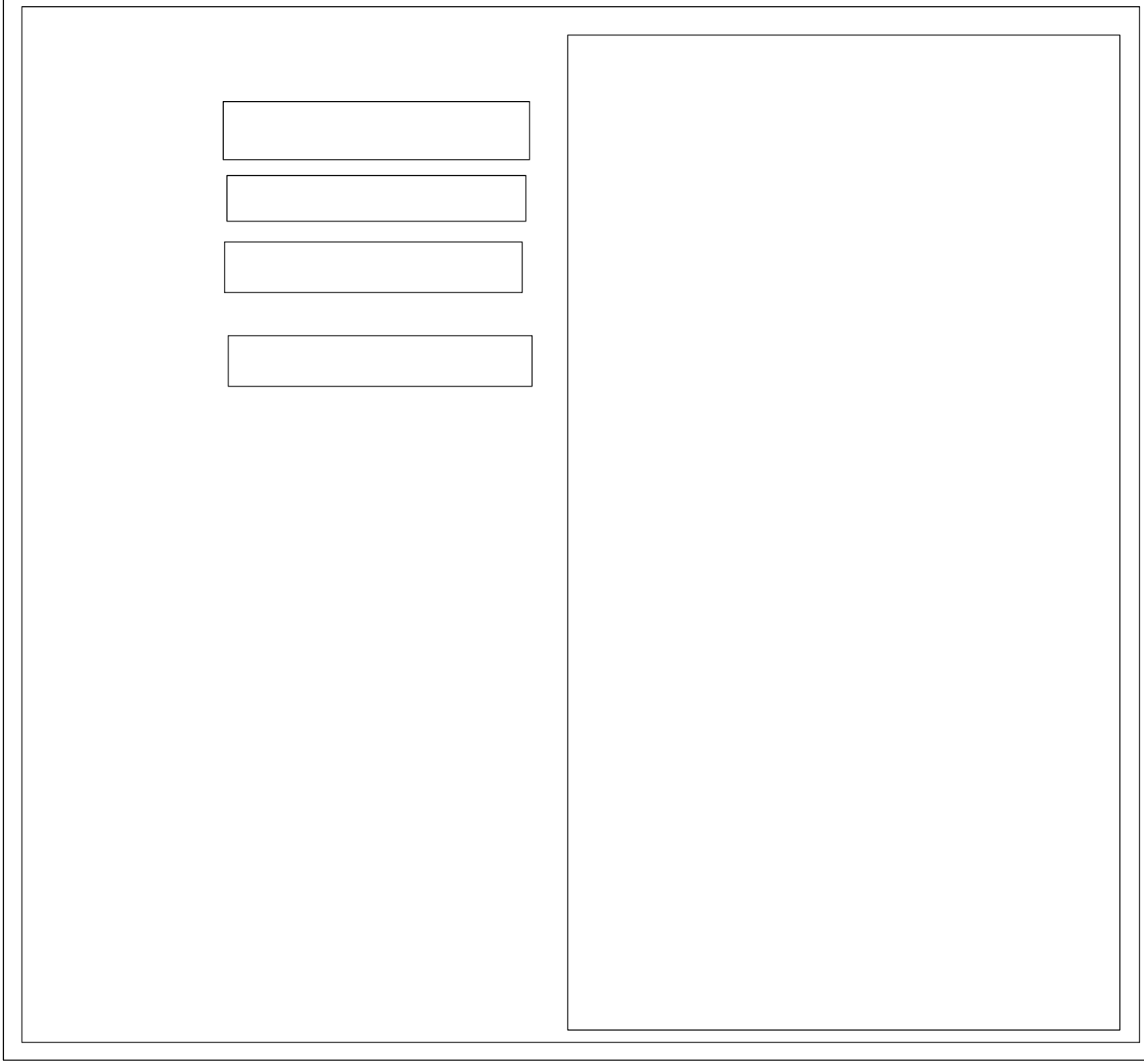


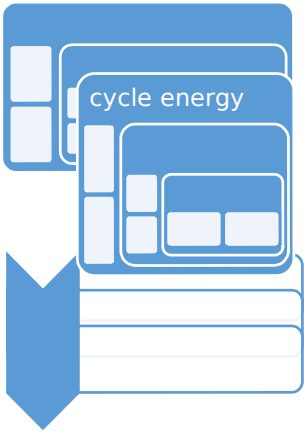












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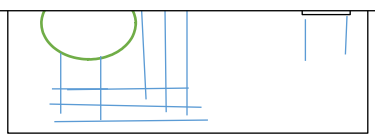

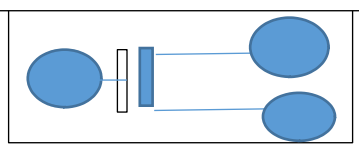

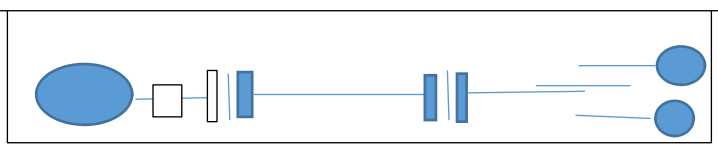

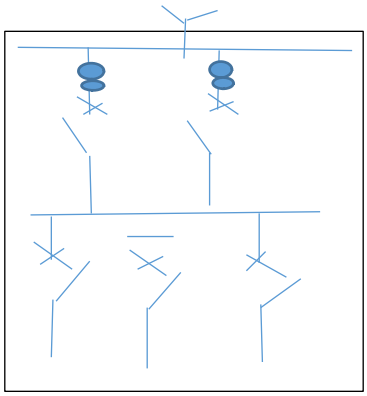

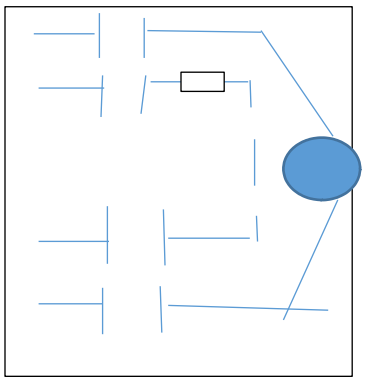

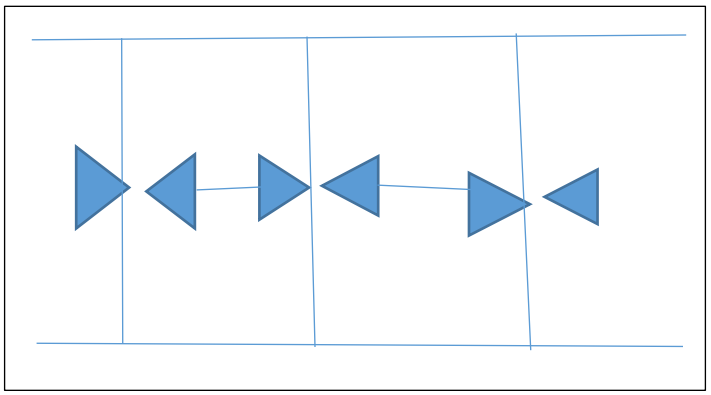

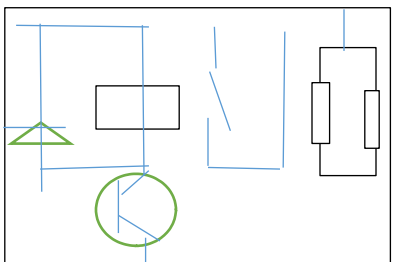

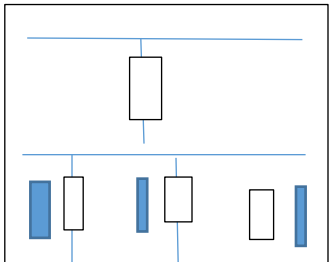

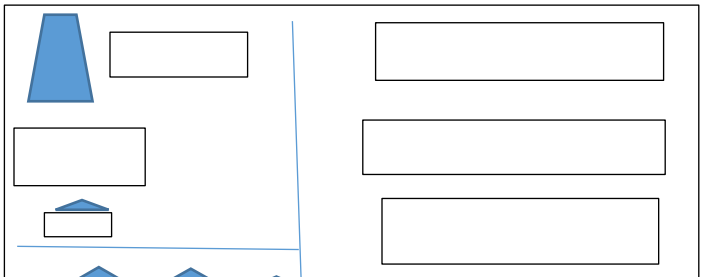

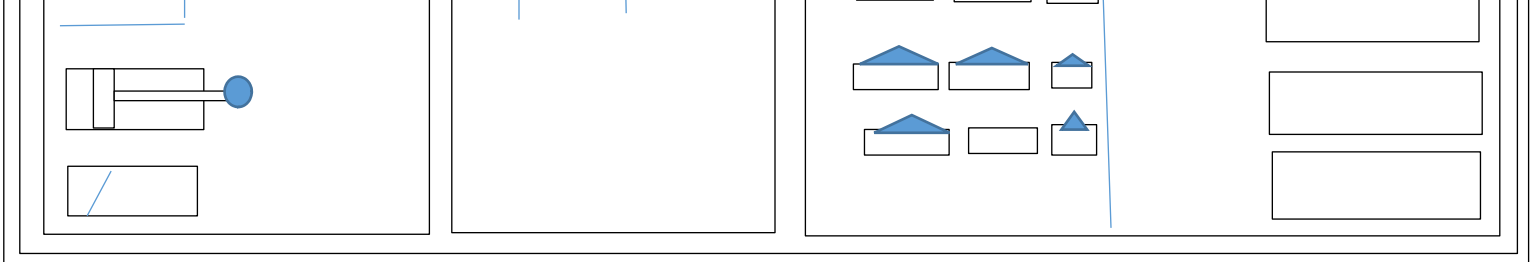
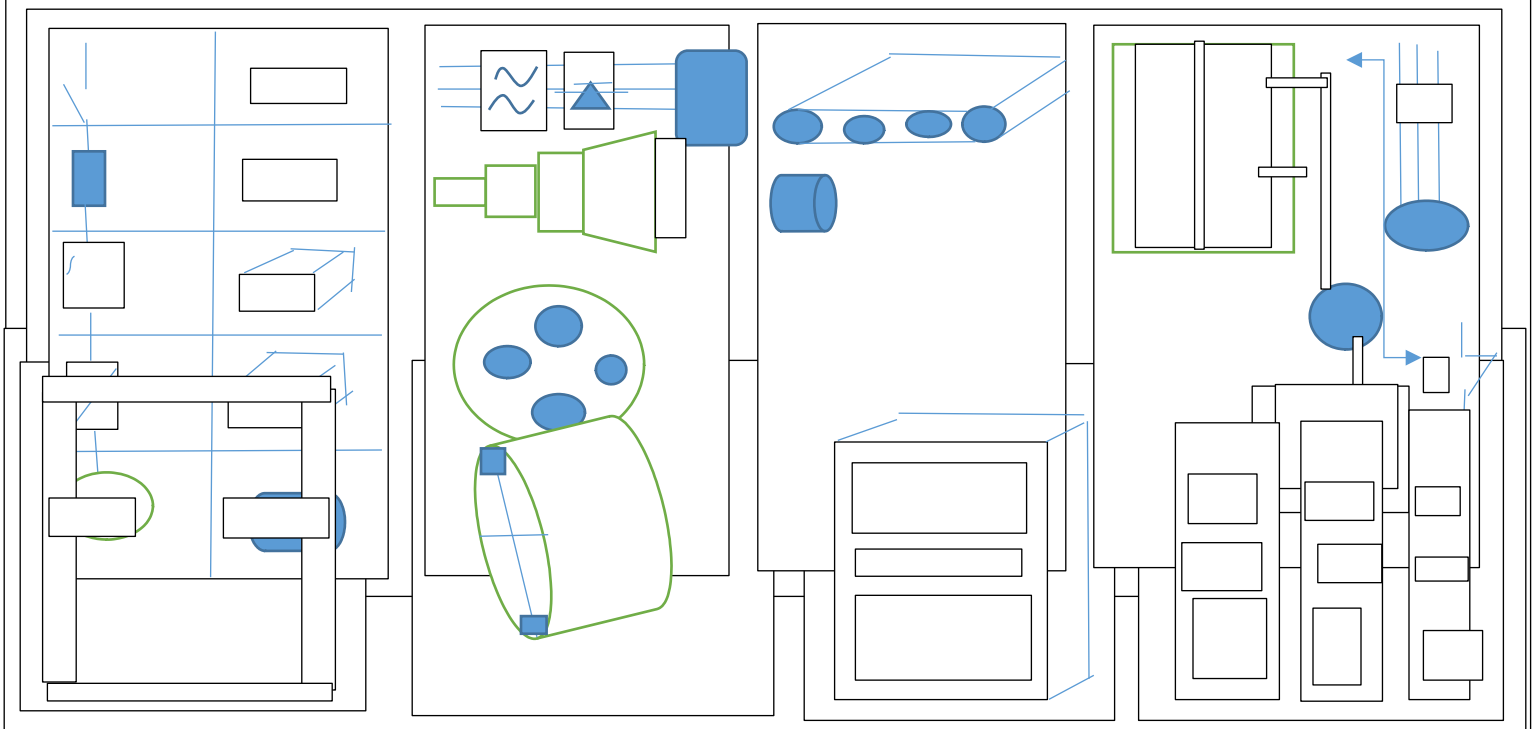
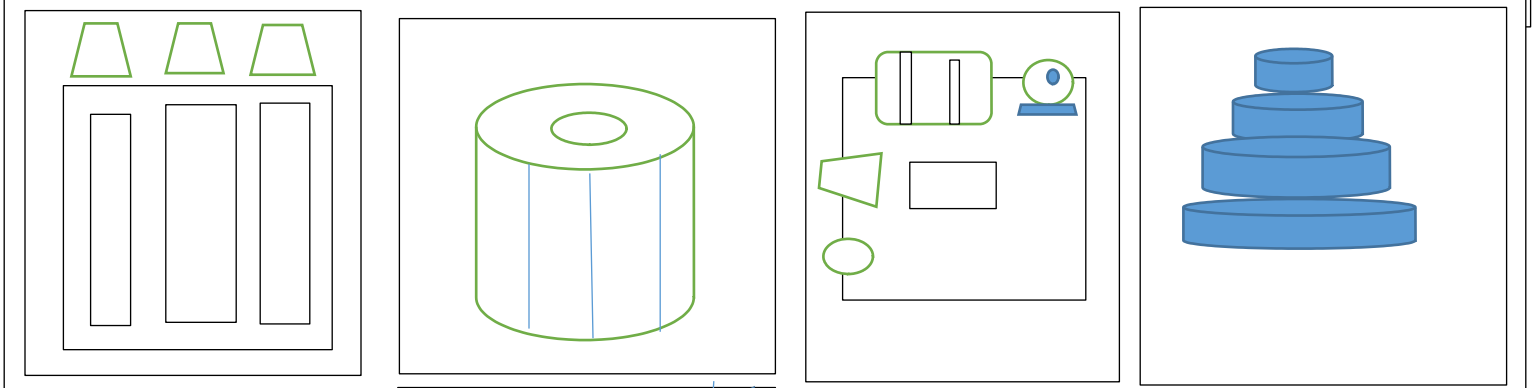
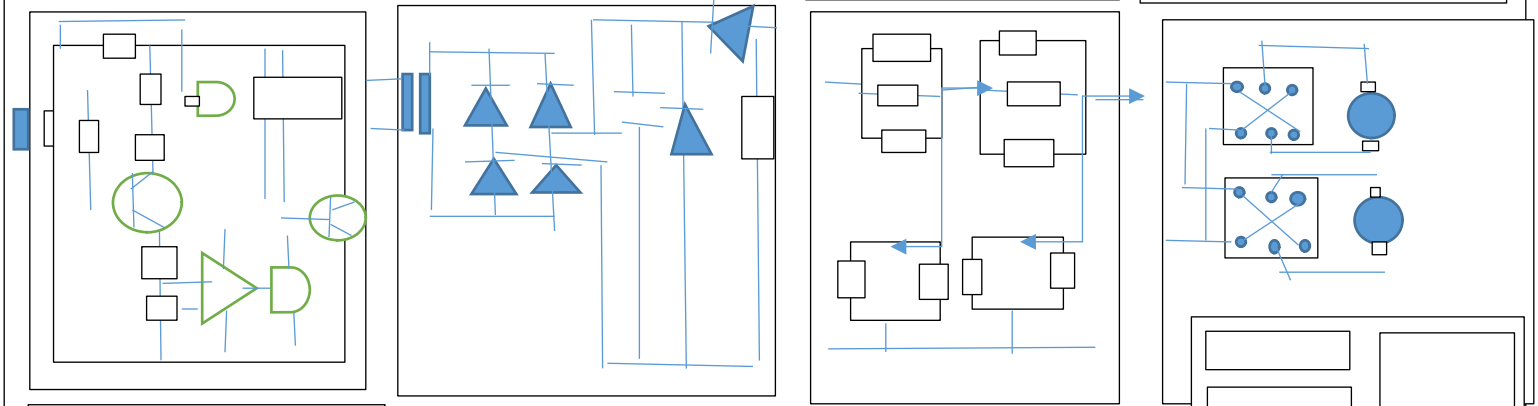
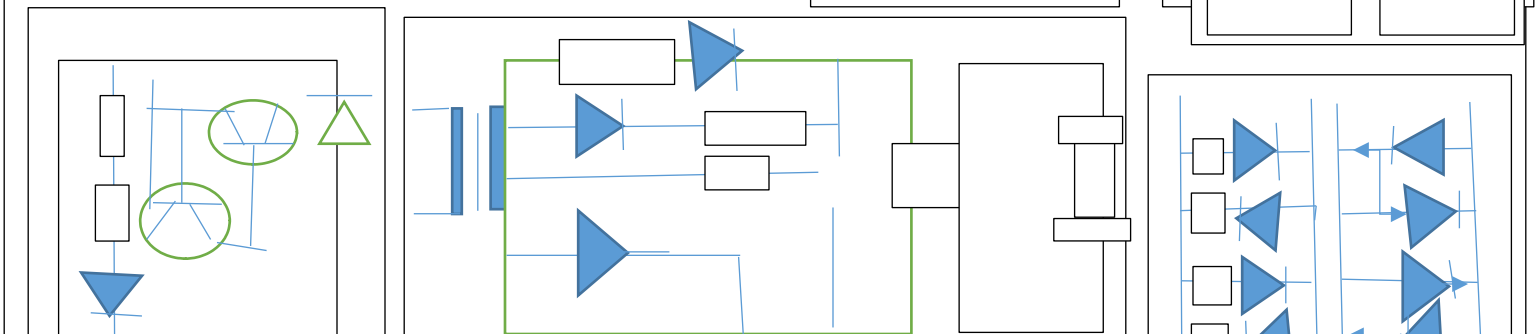

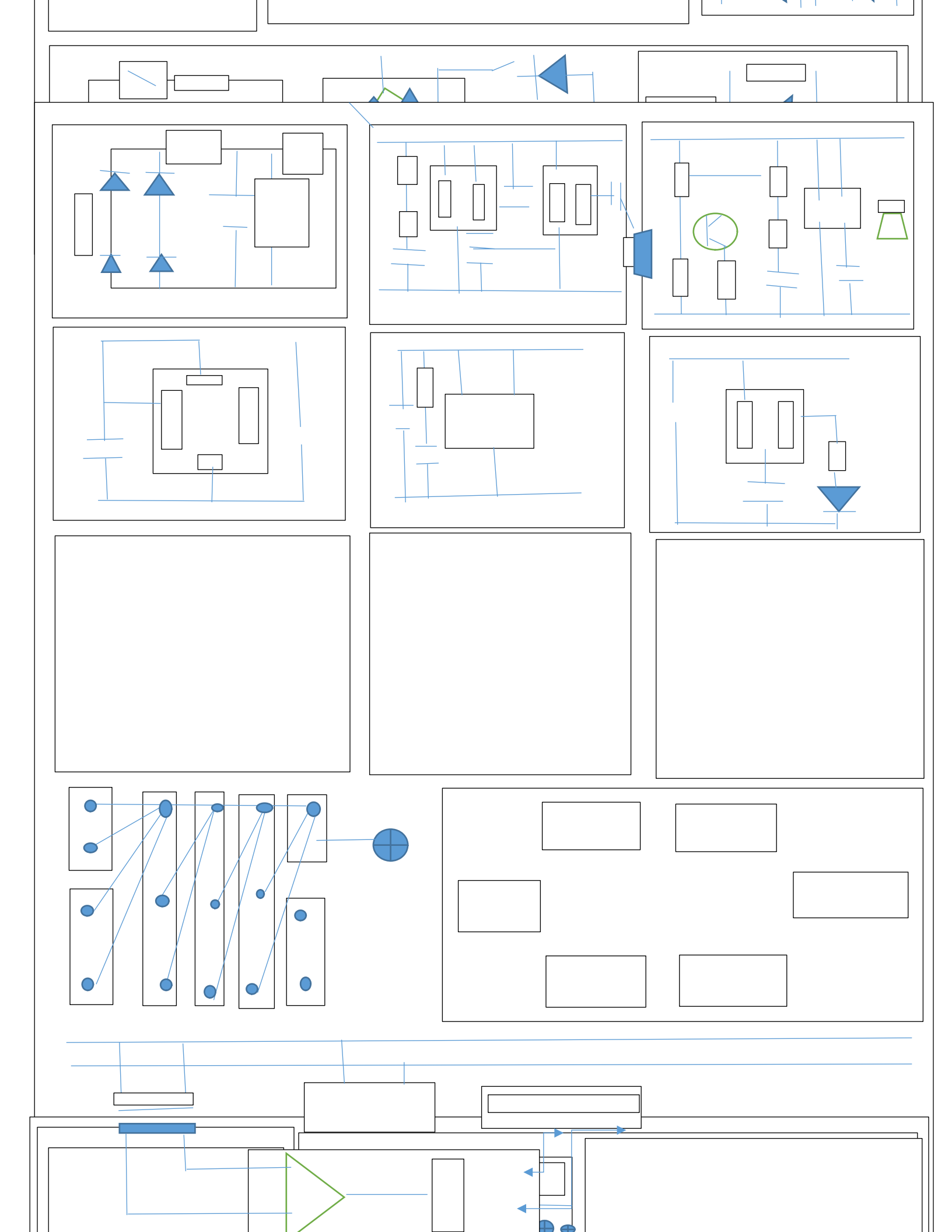

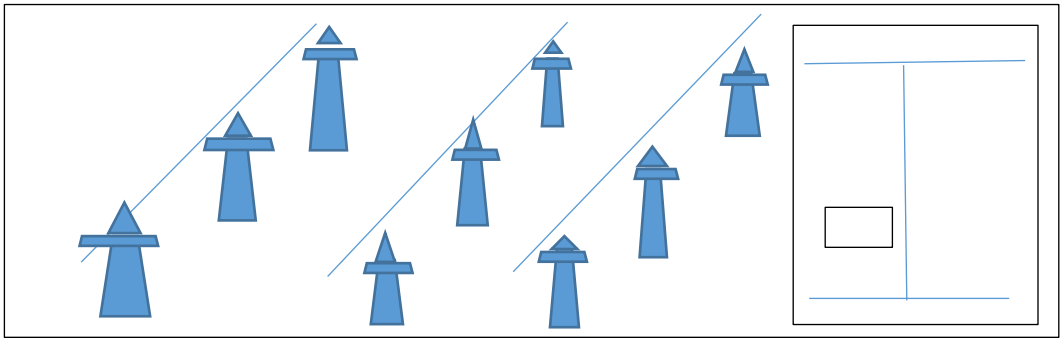

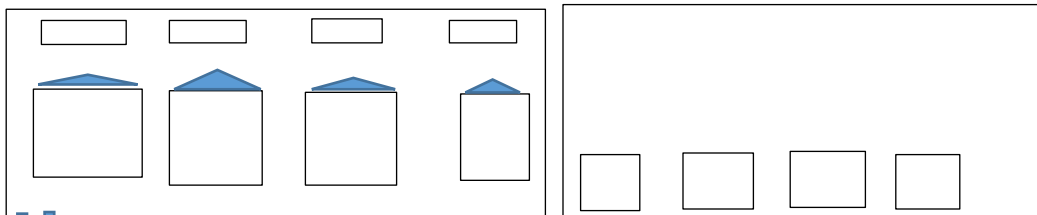

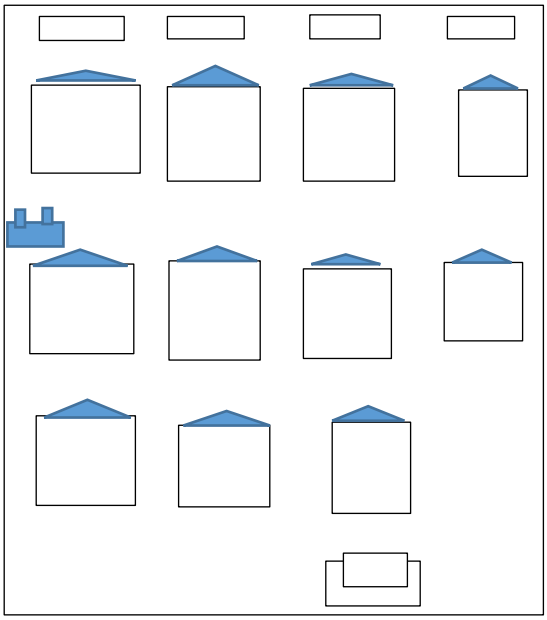

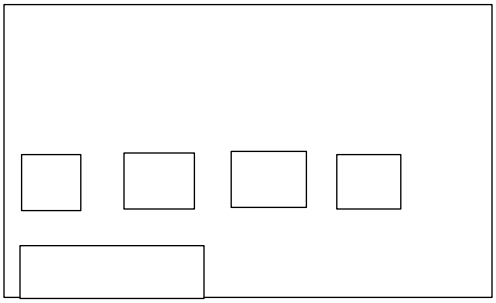

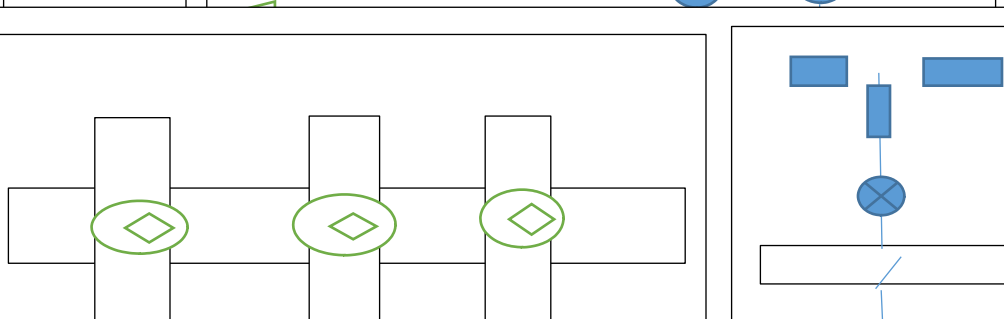

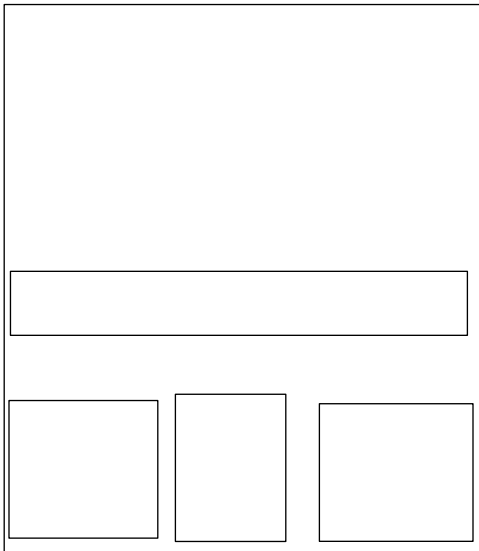

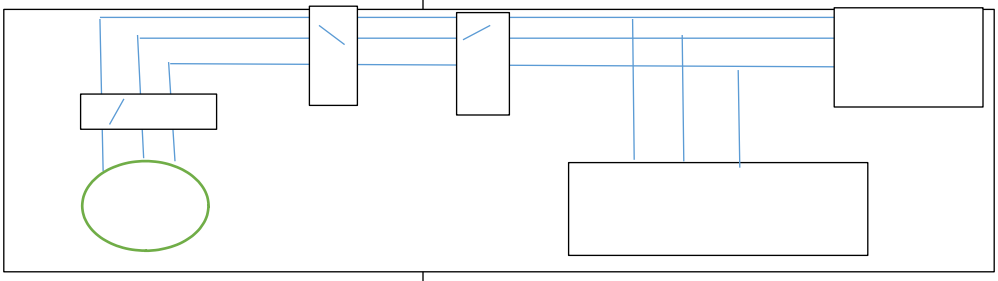

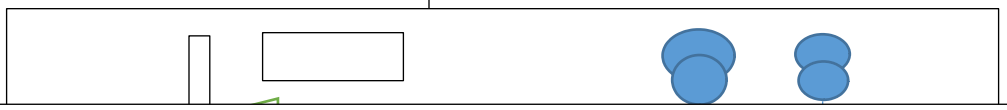

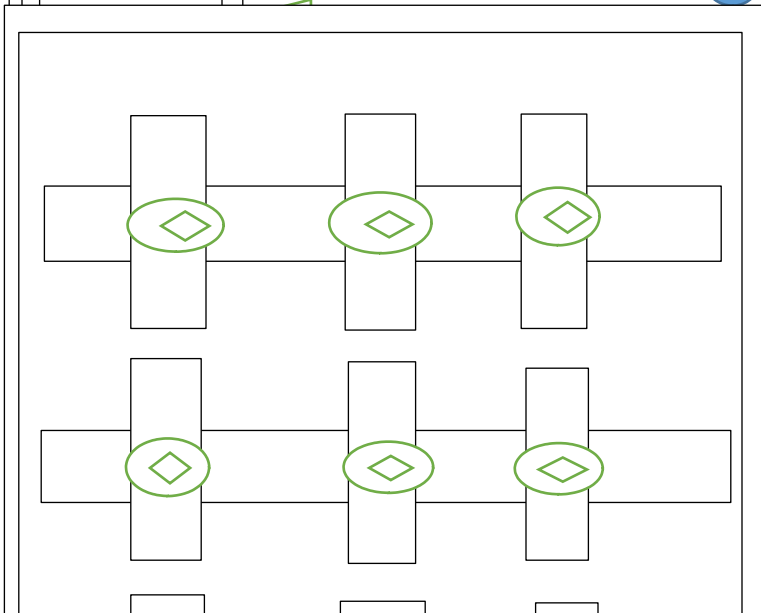

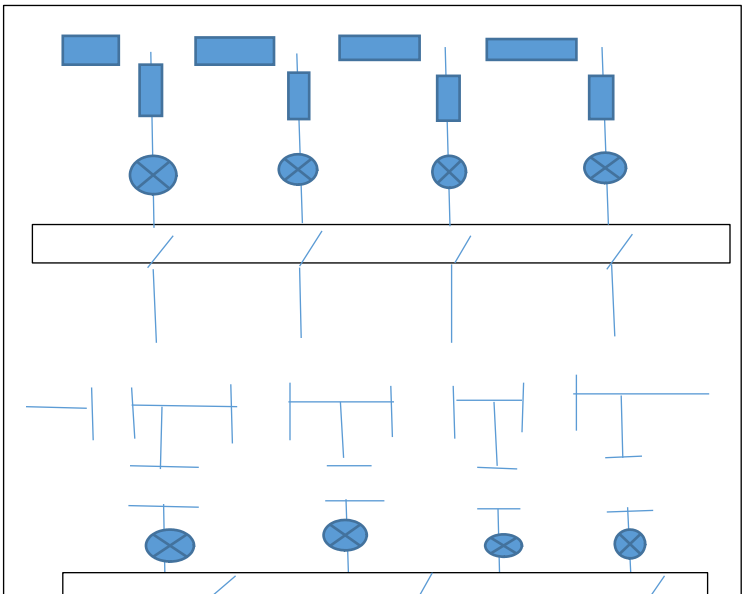

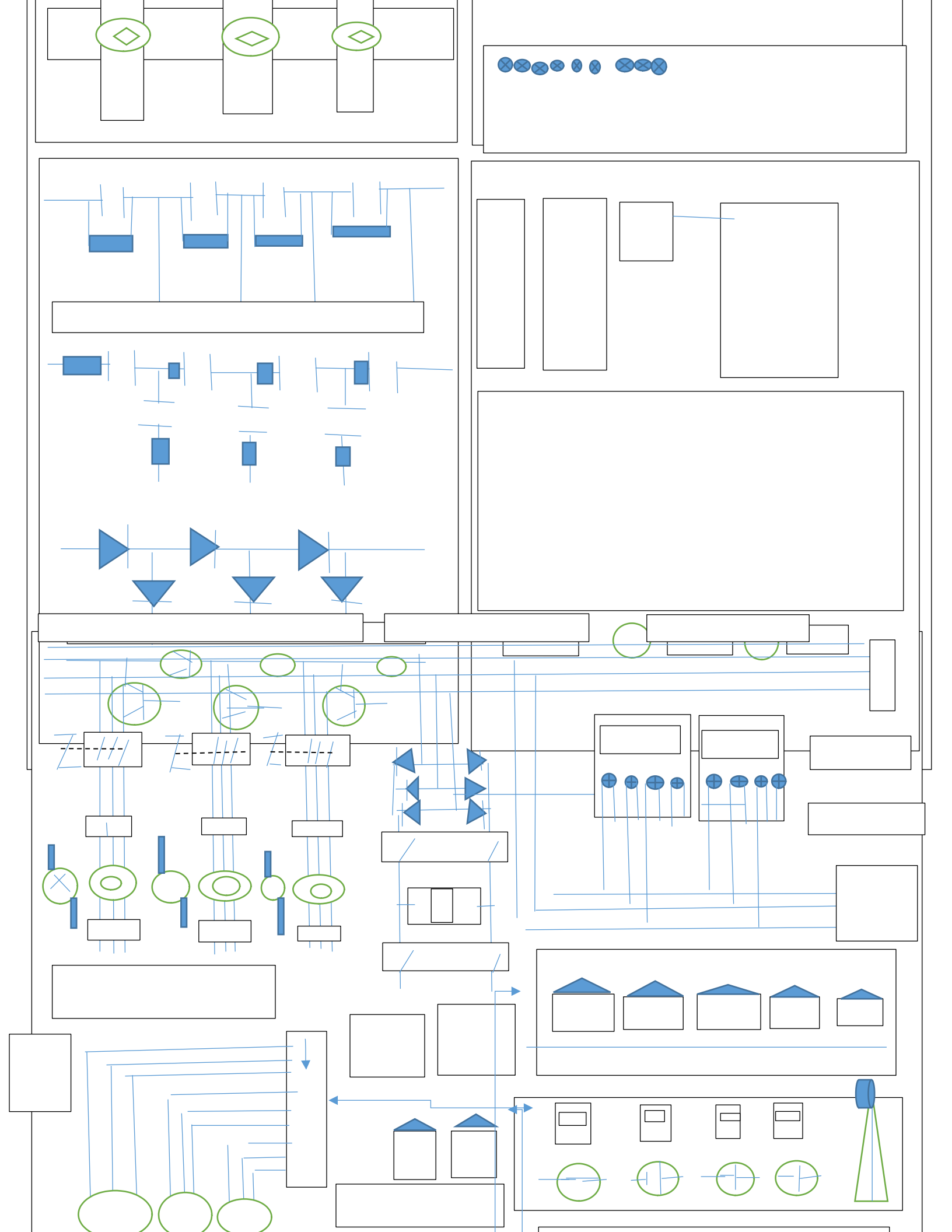

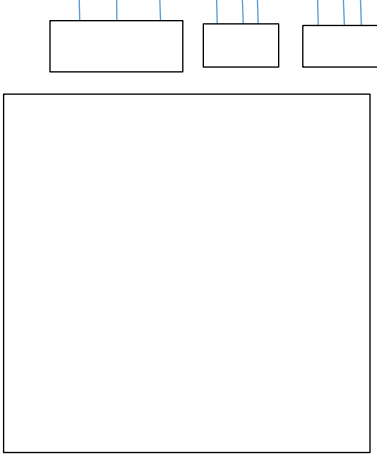

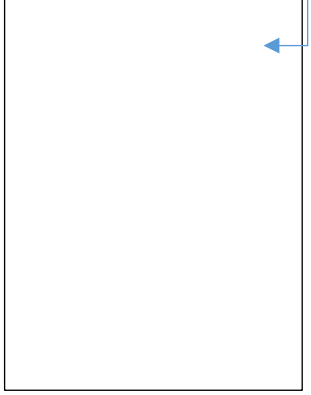

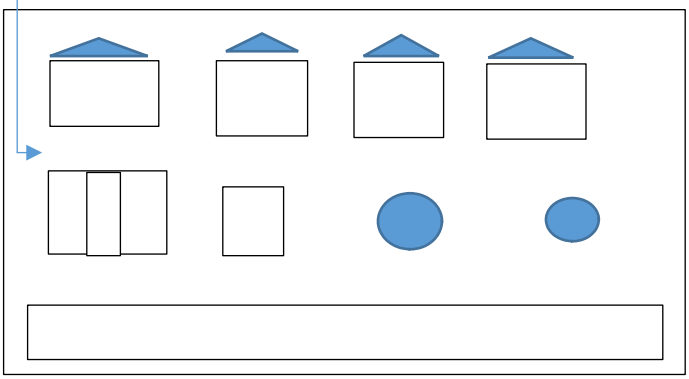

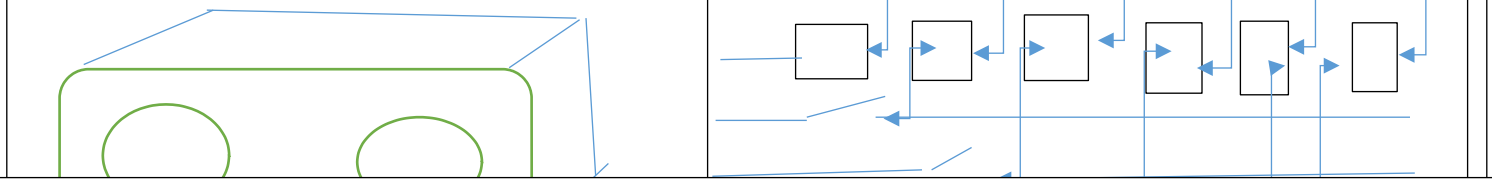

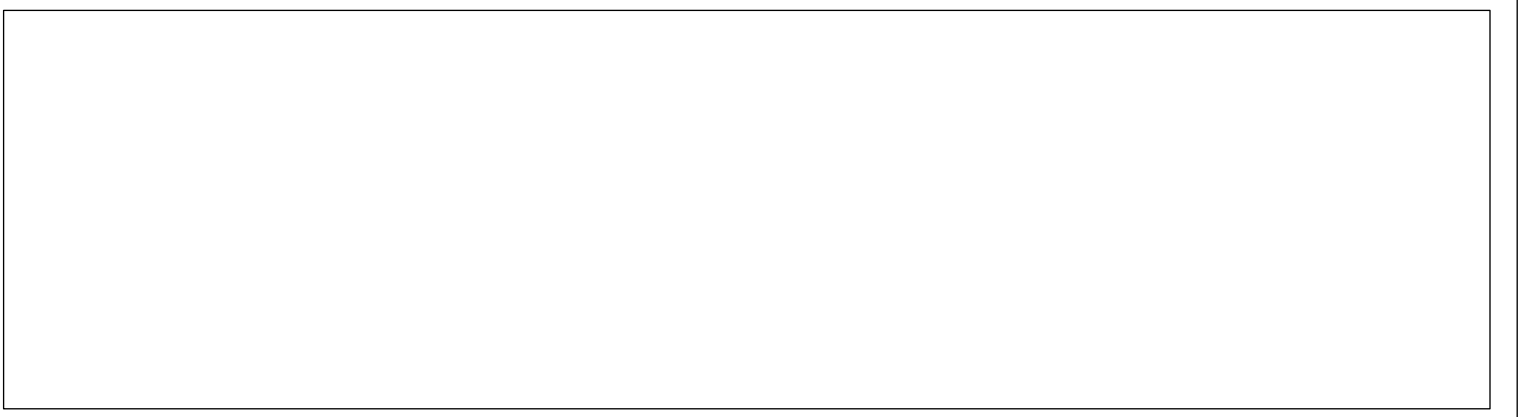

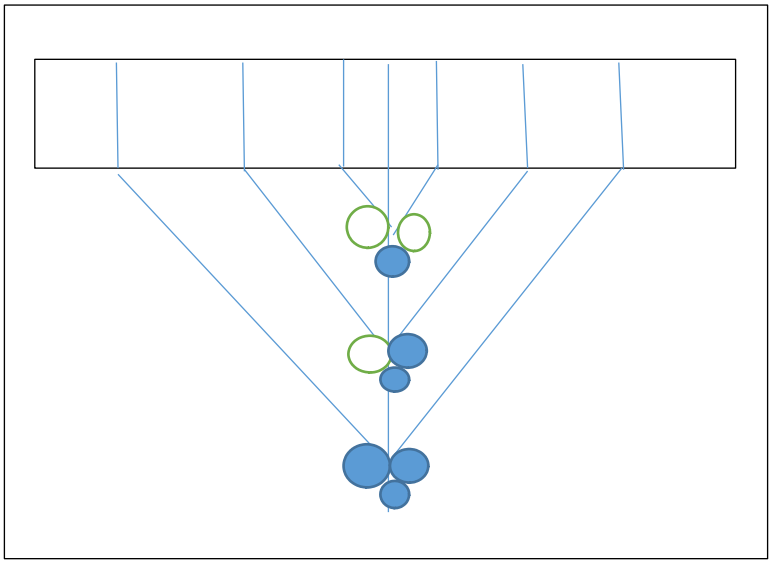

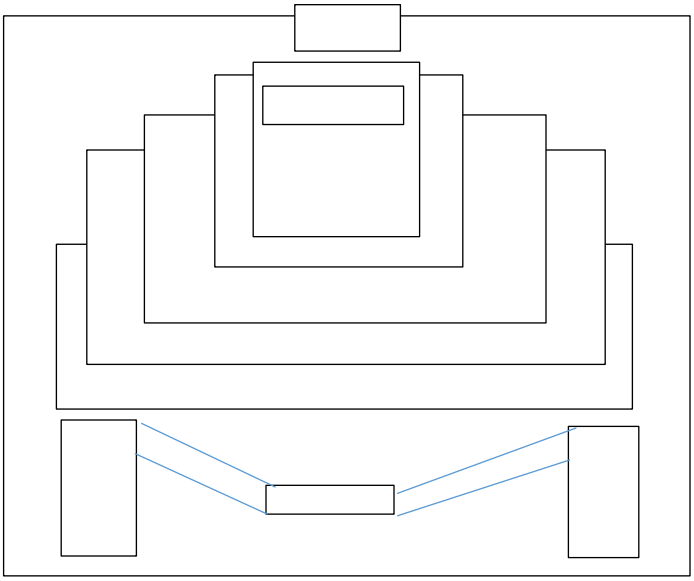

frm1 - 1

```
Private Sub ComboBox1_Change()
End Sub
Private Sub ComboBox2_Change()
End Sub
Private Sub ComboBox3_Change()
End Sub
Private Sub ComboBox4_Change()
End Sub
Private Sub ComboBox5_Change()
End Sub
Private Sub CommandButton1_Click()
End Sub
Private Sub CommandButton2_Click()
End Sub
Private Sub CommandButton3_Click()
End Sub
Private Sub Frame1_Click()
End Sub
Private Sub Label1_Click()
End Sub
Private Sub Label2_Click()
End Sub
Private Sub Label3_Click()
End Sub
Private Sub Label5_Click()
End Sub
```

```
Private Sub Label6_Click()
End Sub
Private Sub TextBox1_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean, ByVal Data
As MSForms.DataO
bject, ByVal X As Single, ByVal Y As Single, ByVal DragState As MSForms.fmDragState, ByVal
Effect As M
SForms.ReturnEffect, ByVal Shift As Integer)
End Sub
Private Sub TextBox1_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean, ByVal
Action As MSForms.
fmAction, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal
Effect As MSFo
rms.ReturnEffect, ByVal Shift As Integer)
End Sub
Private Sub TextBox1_Change()
End Sub
Private Sub TextBox1_DblClick(ByVal Cancel As MSForms.ReturnBoolean)frm1 - 2
End Sub
Private Sub TextBox1_DropButtonClick()
End Sub
Private Sub TextBox1_Enter()
End Sub
Private Sub TextBox1_Error(ByVal Number As Integer, ByVal Description As
MSForms.ReturnString, ByVal S
Code As Long, ByVal Source As String, ByVal HelpFile As String, ByVal HelpContext As Long,
ByVal Cance
lDisplay As MSForms.ReturnBoolean)
End Sub
Private Sub TextBox1_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As
Integer)
End Sub
Private Sub TextBox1_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)
End Sub
Private Sub TextBox1_KeyUp(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As
Integer)
End Sub
Private Sub TextBox1_MouseDown(ByVal Button As Integer, ByVal Shift As Integer, ByVal X
As Single, ByV
al Y As Single)
End Sub
Private Sub TextBox1_MouseMove(ByVal Button As Integer, ByVal Shift As Integer, ByVal X
As Single, ByV
al Y As Single)
End Sub
Private Sub TextBox1_MouseUp(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As
Single, ByVal
Y As Single)
End SubUserForm1 - 1
Private Sub CommandButton1_Click()
End Sub
Private Sub CommandButton2_Click()
End Sub
Private Sub CommandButton3_Click()
End Sub
Private Sub Frame1_Click()
```

```
End Sub
Private Sub Label1_Click()
End Sub
Private Sub Label3_Click()
End Sub
Private Sub Label5_Click()
End Sub
Private Sub TextBox1_Change()
End Sub
Private Sub TextBox2_Change()
End Sub
Private Sub TextBox3_Change()
End Sub
Private Sub TextBox4_AfterUpdate()
End Sub
Private Sub TextBox4_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean, ByVal Data
As MSForms.DataO
bject, ByVal X As Single, ByVal Y As Single, ByVal DragState As MSForms.fmDragState, ByVal
Effect As M
SForms.ReturnEffect, ByVal Shift As Integer)
End Sub
Private Sub TextBox4_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean, ByVal
Action As MSForms.
fmAction, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal
Effect As MSFo
rms.ReturnEffect, ByVal Shift As Integer)
End Sub
Private Sub TextBox4_BeforeUpdate(ByVal Cancel As MSForms.ReturnBoolean)
End Sub
Private Sub TextBox4_Change()
End Sub
Private Sub TextBox4_DblClick(ByVal Cancel As MSForms.ReturnBoolean)
End Sub
Private Sub TextBox4_DropButtonClick()
End SubUserForm1 - 2
Private Sub TextBox4_Enter()
End Sub
Private Sub TextBox4_Exit(ByVal Cancel As MSForms.ReturnBoolean)
End Sub
Private Sub TextBox4_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As
Integer)
End Sub
Private Sub TextBox4_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)
End Sub
Private Sub TextBox4_KeyUp(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As
Integer)
End Sub
Private Sub TextBox4_MouseDown(ByVal Button As Integer, ByVal Shift As Integer, ByVal X
As Single, ByV
al Y As Single)
End Sub
Private Sub TextBox4_MouseMove(ByVal Button As Integer, ByVal Shift As Integer, ByVal X
As Single, ByV
al Y As Single)
End Sub
```

```
Private Sub TextBox4_MouseUp(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As
Single, ByVal
Y As Single)
End Sub
Private Sub UserForm_Click()
End SubUserForm3 - 1
Private Sub ComboBox1_Change()
End Sub
Private Sub CommandButton1_Click()
End Sub
Private Sub CommandButton2_Click()
End Sub
Private Sub CommandButton3_Click()
End Sub
Private Sub Label1_Click()
End Sub
Private Sub ListBox1_Click()
End Sub
Private Sub SpinButton1_AfterUpdate()
End Sub
Private Sub SpinButton1_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean, ByVal
Data As MSForms.Da
taObject, ByVal X As Single, ByVal Y As Single, ByVal DragState As MSForms.fmDragState,
ByVal Effect A
s MSForms.ReturnEffect, ByVal Shift As Integer)
End Sub
Private Sub SpinButton1_BeforeUpdate(ByVal Cancel As MSForms.ReturnBoolean)
End Sub
Private Sub SpinButton1_Change()
End Sub
Private Sub SpinButton1_Enter()
End Sub
Private Sub SpinButton1_Exit(ByVal Cancel As MSForms.ReturnBoolean)
End Sub
Private Sub SpinButton1_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)
End Sub
Private Sub SpinButton1_KeyUp(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As
Integer)
End Sub
Private Sub SpinButton1_SpinDown()
End SubUserForm5 - 1
Private Sub ComboBox1_Change()
End Sub
Private Sub UserForm_Activate()
End Sub
Private Sub UserForm_AddControl(ByVal Control As MSForms.Control)
End Sub
Private Sub UserForm_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean, ByVal
Control As MSForms
.Control, ByVal Action As MSForms.fmAction, ByVal Data As MSForms.DataObject, ByVal X As
Single, ByVal
Y As Single, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)
End Sub
Private Sub UserForm_Click()
End Sub
```

```
Private Sub UserForm_Error(ByVal Number As Integer, ByVal Description As
MSForms.ReturnString, ByVal S
Code As Long, ByVal Source As String, ByVal HelpFile As String, ByVal HelpContext As Long,
ByVal Cance
lDisplay As MSForms.ReturnBoolean)
End Sub
Private Sub UserForm_Initialize()
End Sub
Private Sub UserForm_KeyDown(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As
Integer)
End Sub
Private Sub UserForm_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)
End Sub
Private Sub UserForm_MouseDown(ByVal Button As Integer, ByVal Shift As Integer, ByVal X
As Single, ByV
al Y As Single)
End Sub
Private Sub UserForm_MouseUp(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As
Single, ByVal
Y As Single)
End Sub
Private Sub UserForm_RemoveControl(ByVal Control As MSForms.Control)
End Sub
Private Sub UserForm_Resize()
End Sub
Private Sub UserForm_Terminate()
End SubUserForm7 - 1
Private Sub ComboBox1_Change()
End Sub
Private Sub ComboBox2_Change()
End Sub
Private Sub CommandButton1_Click()
End Sub
Private Sub CommandButton2_Click()
End Sub
Private Sub CommandButton3_Click()
End Sub
Private Sub CommandButton5_Click()
End Sub
Private Sub CommandButton6_Click()
End Sub
Private Sub CommandButton8_Click()
End Sub
Private Sub CommandButton9_Click()
End Sub
Private Sub Label1_Click()
End Sub
Private Sub Label2_Click()
End Sub
Private Sub Label3_Click()
End Sub
Private Sub Label5_Click()
End Sub
Private Sub ListBox1_Click()
End Sub
```

```
Private Sub ScrollBar1_Change()
End Sub
Private Sub UserForm_Activate()
End Sub
Private Sub UserForm_Click()
End SubUserForm8 - 1
Private Sub Frame1_Click()
End Sub
Private Sub Frame3_Click()
End Sub
Private Sub Frame5_Click()
End Sub
Private Sub Label13_Click()
End Sub
Private Sub Label14_Click()
End Sub
Private Sub Label5_Click()
End Sub
Private Sub TextBox11_Change()
End SubModule2 - 1Module3 - 1
Sub frm1()
End SubModule4 - 1
Private Sub CommandButton1_Click()
End Sub
Private Sub CommandButton2_Click()
End
Caption = "UserForm1"
ClientHeight = 8664
ClientLeft = 108
ClientTop = 456
ClientWidth = 19884
OleObjectBlob = "frm1tshingombe.frx":0000
StartUpPosition = 1 'CenterOwner
WhatsThisButton = -1 'True
WhatsThisHelp = -1 'True
End
Attribute VB_Name = "frm1"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
End Sub
End Sub
End Sub
End Sub
Private Sub Frame1_Click()VERSION 5.00
Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} UserForm3
Caption = "UserForm3"
ClientHeight = 7476
ClientLeft = 108
ClientTop = 456
ClientWidth = 19812
OleObjectBlob = "UserForm3tshingombe.frx":0000
StartUpPosition = 3 'Windows Default
WhatsThisButton = -1 'True
```

```
WhatsThisHelp = -1 'True
End
Attribute VB_Name = "UserForm3"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = FalseNewMacros - 1
Sub Macro1()
'
' Macro1 Macro
' visual basic atm program .sten object by system .event )hand
' "&chr(10)&"public class transaction box
' "&chr(10)&"const service as decimal =6.5
' "&chr(10)&"const pin as integer +9343
' "&chr(10)&"dim balance as decimal =150
' "&chr(10)&"private sub label 12_click (by sender System.object event arg handles labe
'
End SubClass3 - 1Class4 - 1
Private Sub CommandButton1_Click()
End Sub
Private Sub CommandButton2_Click()
End Sub
Private Sub CommandButton3_Click()



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UserForm9 - 1
Private Sub Frame3_Click()
End Sub
Private Sub TextBox6_Change()
End Sub
```
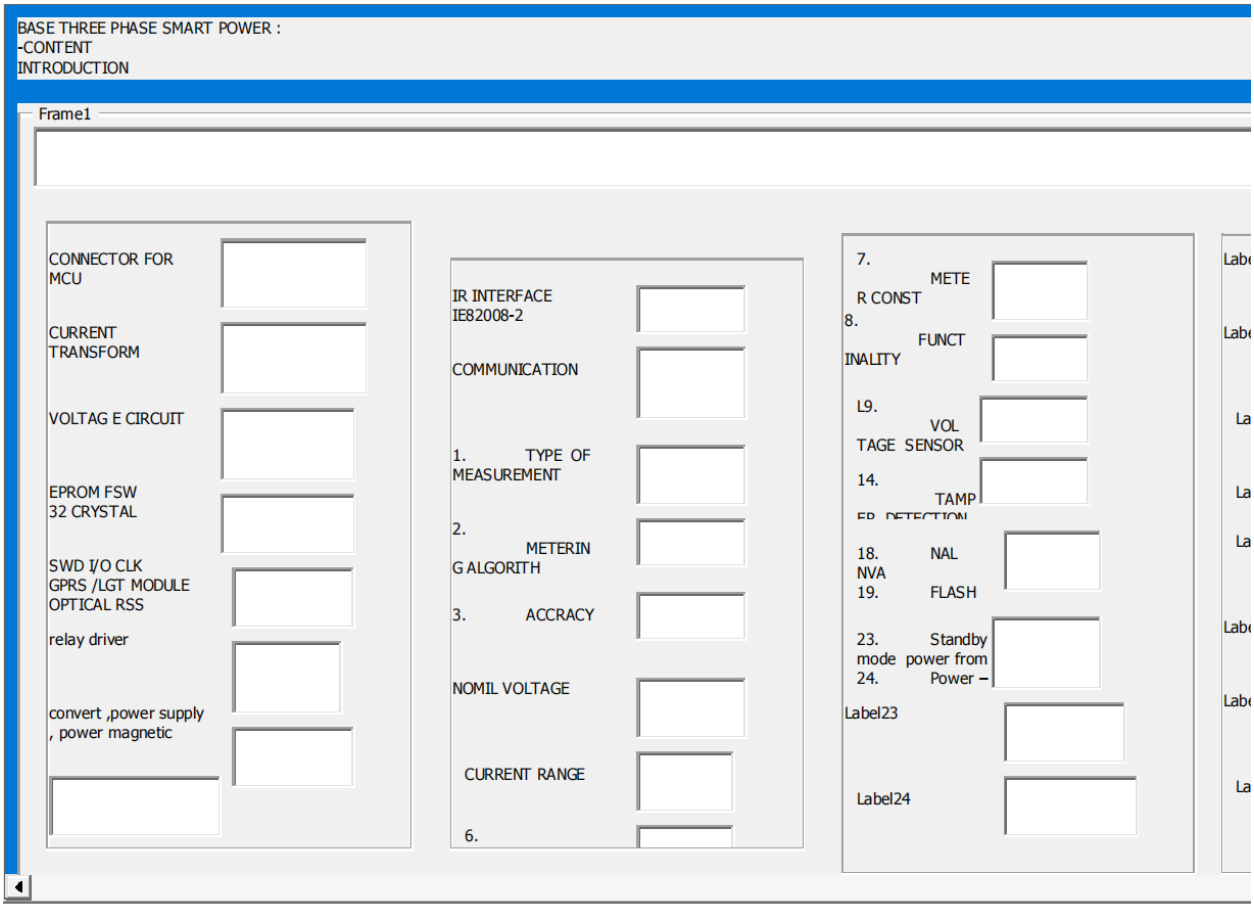
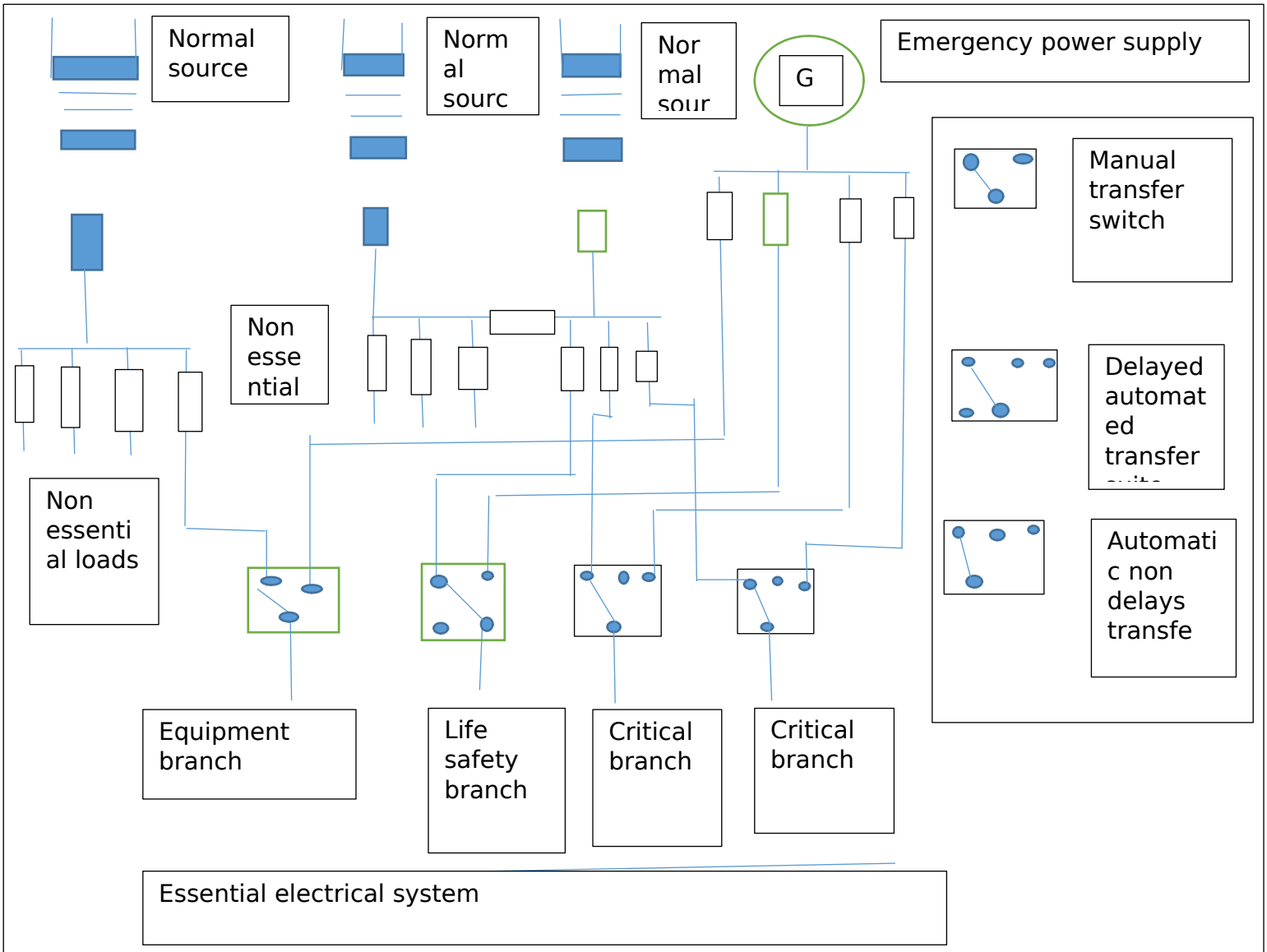
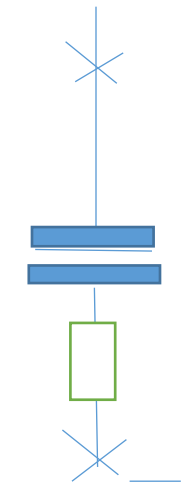
BASE THREE PHASE SMART POWER :
-CONTENT
INTRODUCTION
SERIES MKM35512 SERIES
CONNECTOR FOR
MCU
CURRENT
TRANSFORM
VOLTAG E CIRCUIT
EPROM FSW
32 CRYSTAL
SWD I/O CLK
GPRS /LGT MODULE
OPTICAL RSS
OPTICAL
relay driver
convert ,power supply
, power magnetic
IR INTERFACE
IE82008-2
COMMUNICATION
1. TYPE OF
MEASUREMENT
2.
METERIN
G ALGORITH
3. ACCRACY
NOMIL VOLTAGE
```
```

CURRENT RANGE
6.
NOMIN
7.
METE
R CONST
8.(IMP/KWH,M /K
FUNCT
INALITY
L9.
VOL
TAGE SENSOR
10.
14.
TAMP
ER DETECTION
18. NAL
NVA
19. FLASH
20.
23. Standby
mode power from
24. Power –
down power
Label23
Label24
Label25
Label26
Label27
Label28
Label29
Label30
Label31
Label32
Frame1


BASE THREE PHASE SMART POWER :
-CONTENT
INTRODUCTION
Frame1
CONNECTOR FOR MCU
CURRENT TRANSFORM
VOLTAG E CIRCUIT
EPROM FSW 32 CRYSTAL
SWD I/O CLK
GPRS /LGT MODULE
OPTICAL RSS
relay driver
convert ,power supply , power magnetic
IR INTERFACE IE82008-2
COMMUNICATION
1. TYPE OF MEASUREMENT
2. METERIN G ALGORITH
3. ACCRACY
NOMIL VOLTAGE
CURRENT RANGE
6.
7. METE R CONST
8. FUNCT INALITY
L9. VOL TAGE SENSOR
14. TAMP
18. NAL NVA
19. FLASH
23. Standby mode power from
24. Power –
Label23
Label24



Power distribution system , typical application by facility type 10, class class x level 1, generation nfpa ,power the load maximum of 19 second series automatic transfer ,, health ..



13,8KV

X/R=15

375MVA

13,8KV

3750KVA

4,16KV

ADVANCED BASIC ESSENTIAL

Z= $R^2+(XL+XC)$

1/Z=

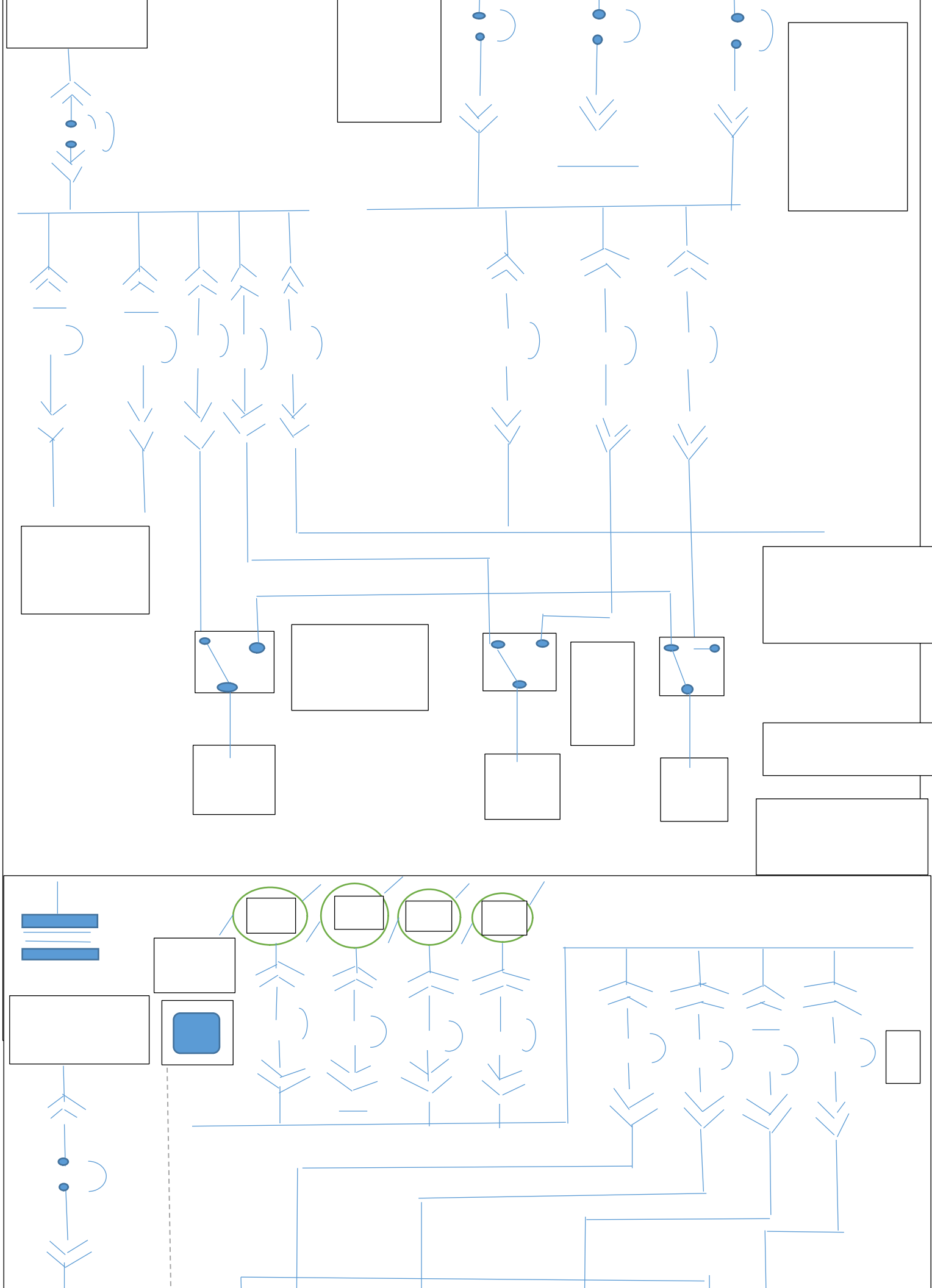
Generator x=number unit

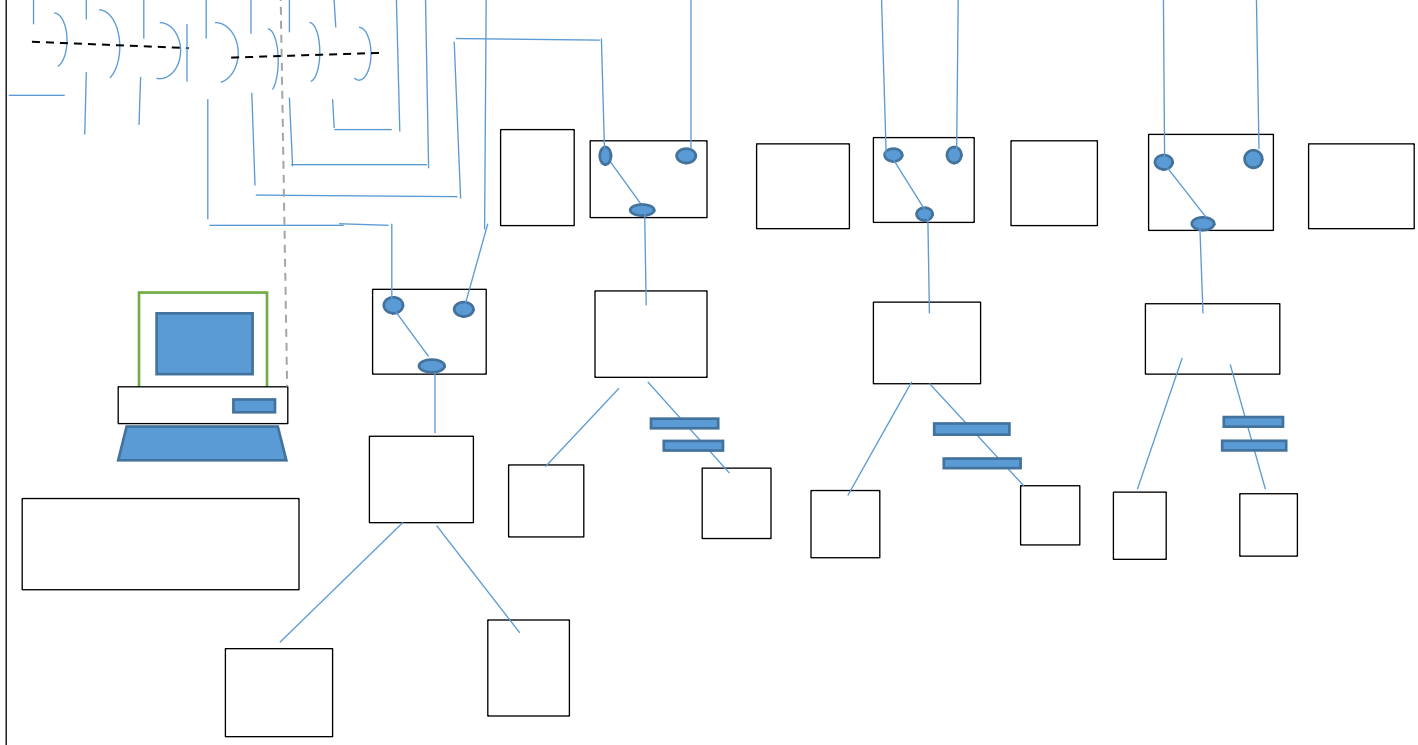
G

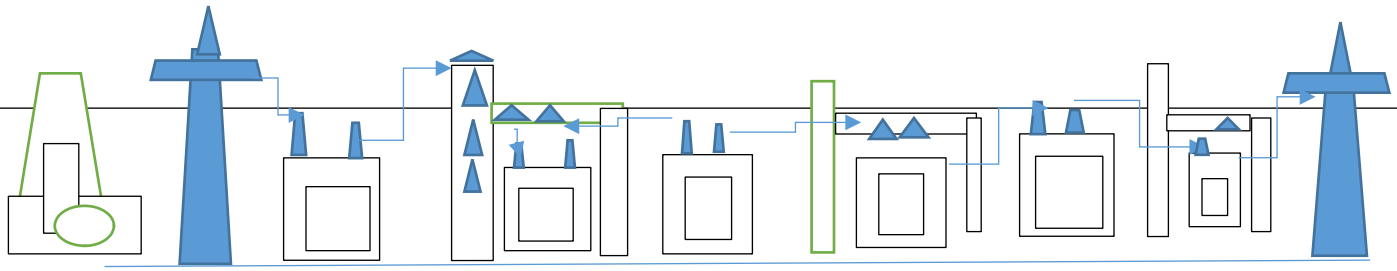
1/G=

G1 G2 G3

1/R







Breakers calculat on a symmetrical current rating : fault calculation : on note interrupted
symmetrical .

- 13,8 kV ,,breakers x/R= 15, 375 MVA,transfo 13,8 kV primary ,3750kva , secondary ,4,

On system,13,8 kV system ,3,75 MVA base ,

Z=3.75MVA/375,,= 0,01 Pu or 1%
Z^2=X^2+RR^2=R^2(x^2/R^2+1)
R=Z/√x^2/R^2+1=1/√266=1/15.03=0,066%
X=X/R(R)=15(0,0066)=99%
Transformer standard standard ,5,5% impedance has ,+ 75 manufacture toleri,
Transformer standard ,5,5% impedance ..
From transformer loss per unit percent ,R is calcul .
31,000 watts full load
-6,800 watt no load load

_____
24,209 watt load losses
R= 24,2kw/3750 KVA = 0,0065 Pu or ,0,65%
- transform x = √ z^ 2-R^2.√(5.09)^2-(0,65)^2=√25.9 ^2-0,42=√25,48=5,05%

_____

	X.	R.	X/ R
13,8 kV system	0,98%.	0,066%.	15
Transfo.	5,05%.	0,65%.	8
Systt total.	0,04%.	0,76%.	8

.tree

For three phase ,i3 phase = E/x ,,
X ohm ..
I3 phase = IB/X,, IB is base ,,
- base current IB = 3,75MVA/√3(4,16Kv)=0,52k.A
I3 phase = I1/ x = 0,52 /0,0604=8,6k, sym ,,syst ,x/ R= 9 is less 15
Duty circuit ,is 8,6 ka three phase I and moment ..
8,6× 1,6 = 13,7 KA. I 3
- for line - to grounv fault ,
ILG = 3E/2x1+X0=4IB/2x1+xo ,xo is seauet reactance transformer positive ..
ILG= 3(0,52)/2+0,0604)+(0,0505=9,@KA sym ..
The ,50 vcp ,, applied,z= x ,in= x = 0,52/0,55=9,5ka stm ,
X/ R ration ,15 or less multiot ,10 for short circuit bdury ,short circuit duty is then 8,5 kA

_____
Design distributor system

drawing note / build..

1***.4.1.2.5.***Fault calculation check break application or generator bus for the system gene
transient reactance ,x"d= 11% ,,or x = 0,x= pu ,
Gen ,x/R ratio ,30.

1/X's= 1/x+1/x+1/x== 3and 1/Rs= 1/R+;1/R+1/R=3/R..
X's= x/3and Rs ,= Rs=R/3,, system ,X's/Rs = x/R= gen .x/R=39,, generator neutral groun
l/x+1b/x+31b/x= 3(1,04)/0,1@=28,4 ka ,symetru,E/x Amper ,system ,x/R of I multiple b.
-Three phase symmetrical interri capacity

Breaker type|vmax| max ki| at 4,16 op vo

1***.4.1.2.6.***Overview : research in training and .university and college ,cpd learning
campagnie work base : experiemental.
Module ,construction distribution system design

- describe between fault current peak ,value ,RMS symmetrical value .RMS , asymmetric
I= symmetrical RMS current ,IP = peak current,e= 2,71,wv,= 2.p.f ..
Cycle (ANSI/IEEE.C37.13.2.2015..
-Design a distribution system.
-Developm of a system one - line ..imp, --_Standard drawing , additional d
rawing --schedule and specification
- power systems voltage ,
Voltage classified
- income service Volta,income consider
- type of system:
Power system analyse ,short current wave.
- fault current calculat, fault calculai for specifications,medium voltage ,breaker fault ,mo
Grounding ground fault ,
- typicK power systt generator and generator system ,generator short circuit ,caractt,ger
motor power factor correction ,
- typical applicatt ,health facilities ,quickly generator and load bank ,power quality,
- power quality seism ,ampacities for conductor ,NPA 70-2014,
- safety goal power hazard oashs , NEC

- regulation requ
& Maximum flexibility ,minimum
- maximizing electrical minimy operating : loss conductor transfory .
: discussed further ,
- development phase : input plumbing construction v.
- construcy documents : project ..

Experiemental orientation guide workbase Manuel construction guidelines:
- electrical engineering
Electrician
Design. ,,
Z×A×U= .
ΔU.2L××Pxz×Z×A

..**schema electrical / drawing design
 panel
_____&
- electrical power effect dynamic between 2 conduct ,3 conductor parallel , consumer po
Courent I1,I 2..
S= porter in cm ,a = distance in cm ,,
P= U× I.[W].IP.U
P=U×I×cos .flux ..IP × U× cos alph .
P= 3×I×I×cos [W] IP×3×U×cos flux
F2, 0,2×I@×2×s,a
=.....(N)
F3=0,808×F2[N]
F3=0,865×F2[N]
F3=0,865×F2[N]
-resistancd of conductor,L= ligth of conductor ,m aluminy,
- Z = conductivity, m /mm ion ,
A = across area conductor ,mm Sq..
- resistance = of coiling of induction condensator , L = inductance ,H ,f = frequency ,Hz ,
- series parallel installation ,
U=I×R[V].I.U..R=, R.I..ohmm × 33 m ,ohm m× 8,3 mm Sq × ohm
XL= 2×π×f×L, XC ,,2× π×f×c
{
=
ZR2(XL-XC)2=+ZR,,cos = --- ohm

RG, R1R2/R1+R2=..
R1R2×R×./ ..
Z..Z.@..Z2..=, X..X..

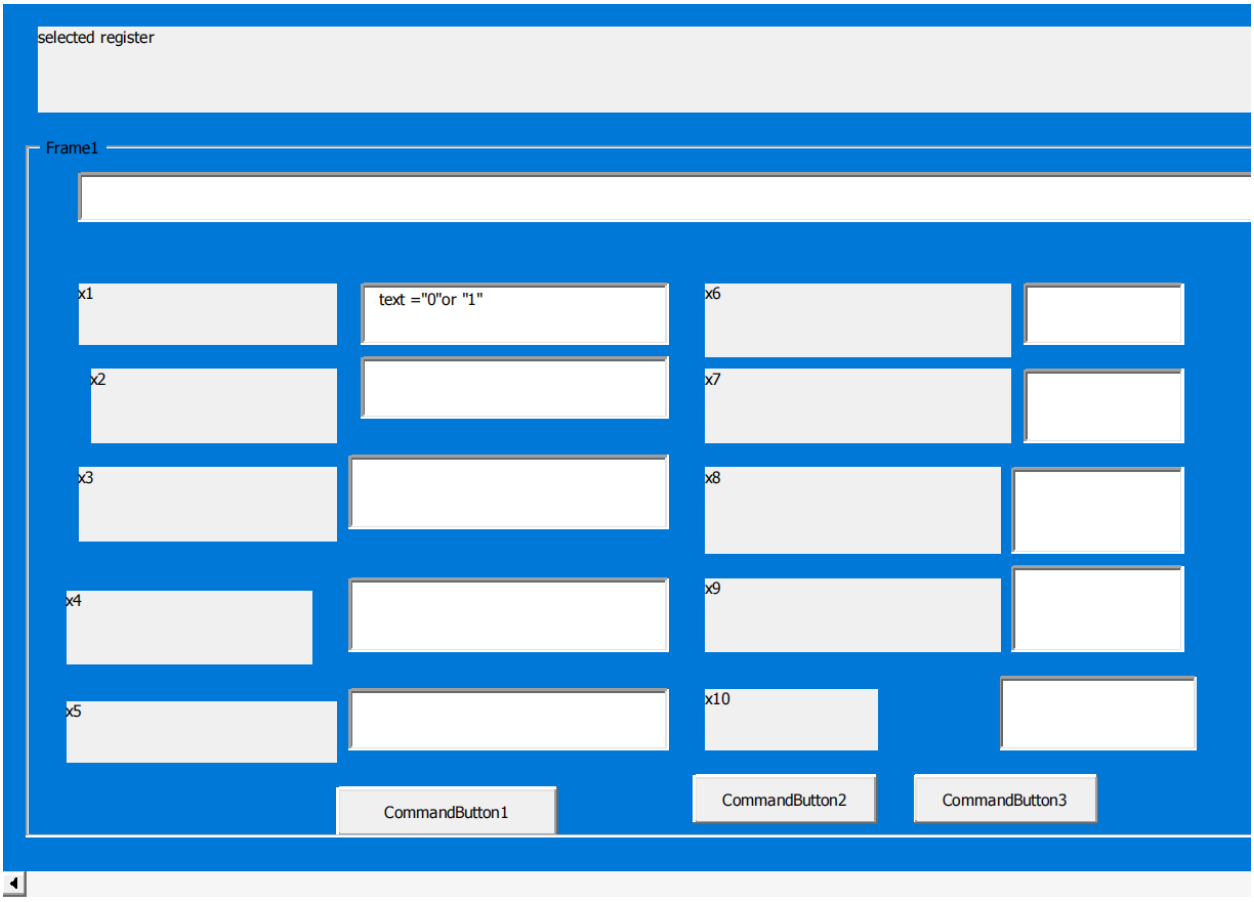
1***.4.1.2.5***1***..***Cable and conductor : value short circuit current ,,assignment current ,,
Transformation
- system design of cable conductor:
Cable PVC,0,75 mm , souple,H05V - K ,0,75 black ,,big cable coutchouc ,3 conductor = 2
- protection , green yellow , symbol h ,supply voltage ,300/ 300v,03,,$00/500,450/750v
Material insulation cable : caoutchouc naturej styrene ,butadiene silicon material,PVC ,st
- construction specialist cable : meplat with conductor separe H,NHL ,,cable plastic gain
- characteristics of materials : polythylene ,elastic ,thermoplastic ,color ,grid degree Up ,

Fuse motor tree phase value rotor squire ,(DIN VDE 0636,,
Control thermic ,,start delta over load max start ,2 × assignt current , max 5 sec ,, regula
Switch ,switch gear ,,, close open circuit
Usage current ,
I = courent etablid ,IC = courent coupe,I e = courant assigned d employ ,u tension avan
60847-3(VDE 0660 partie switch for motor starting b,,power cut open close ,L/Rv,ms.

Letter and Laball switch USA ..
S ,switcy combination lock non lokkin, disconnect switch ,drum switch ,flow operated swi
switch ,locking switch,master switch, mushroom head,pressure or vacut,operated switch
switch single throw switch ,speed switch ,temperat actuated , time delay switch ,toggle s
,commutating field compensating ,generator ,motor separately excited ,series field ,shur
Connector,,
- Consol visual ,prodibus , can bopen ethernet commuyaty ,net pin 1, pin
Atex , installation

Command automatics

Installatt port ethernet ,port ethernet prise RJ45,led ,port com
Synopsis cabling system
Logigrame algorithm ,commutator.




```
Sub Macro1()
'
' Macro1 Macro
' visual basic atm program .sten object by system .event )hand
' "&chr(10)&"public class transaction box
```

```
' "&chr(10)&"const service as decimal =6.5

' "&chr(10)&"const pin as integer +9343

' "&chr(10)&"dim balance as decimal =150

' "&chr(10)&"private sub label 12_click (by sender System.object event arg handles
labe

'

End Sub

Sub Macro2()

'

' Macro2 Macro

' type meter three phase ac static watt hous smart

' "&chr(10)&"metering algorith

' "&chr(10)&"accuracy  nomial voltage  mettering frequence metering const
functionality current sensors energy pulse energy temper detection remote
communication iec 62056 extrevm internal battery

'

    ActiveWindow.ActivePane.VerticalPercentScrolled = 205

    ActiveWindow.ActivePane.VerticalPercentScrolled = 146

    Selection.TypeText Text:= _

        "------------------------------------------------------------"

    Selection.TypeText Text:= _

        "------------------------------------------------------------"

    Selection.TypeText Text:="-------"

    Selection.TypeParagraph

    Selection.PasteAndFormat (wdFormatOriginalFormatting)

    ActiveWindow.ActivePane.VerticalPercentScrolled = 146

    Selection.TypeParagraph

    Selection.TypeParagraph

    Selection.TypeParagraph

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    Selection.TypeParagraph
```

Selection.TypeParagraph

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Selection.Paste

ActiveDocument.Save

ActiveWindow.ActivePane.VerticalPercentScrolled = 207

ActiveWindow.ActivePane.VerticalPercentScrolled = 202

ActiveWindow.ActivePane.VerticalPercentScrolled = 197

ActiveWindow.ActivePane.LargeScroll Down:=1

ActiveWindow.ActivePane.VerticalPercentScrolled = -75

ActiveWindow.ActivePane.VerticalPercentScrolled = -41

Windows("Doc8 drawing tshingombe fiston").Activate

Windows("Doc2 drawing tshingombe").Activate

```
    ActiveWindow.ActivePane.VerticalPercentScrolled = 127
    ActiveWindow.Close
    ActiveWindow.Close
    ActiveWindow.Close
    ActiveWindow.Close
    ActiveWindow.Close
    ChangeFileOpenDirectory "C:\Users\Library SIX\Desktop\"
    ActiveDocument.SaveAs2 FileName:="Doc1 tshing.docx", FileFormat:= _
        wdFormatXMLDocument, LockComments:=False, Password:="",
AddToRecentFiles _
        :=True, WritePassword:="", ReadOnlyRecommended:=False,
EmbedTrueTypeFonts _
        :=False, SaveNativePictureFormat:=False, SaveFormsData:=False, _
        SaveAsAOCELetter:=False, CompatibilityMode:=15
    ActiveWindow.Close
    Application.Quit
End Sub
Sub Macro3()
'
' Macro3 Macro
' register computer  select  pin input out put
' "&chr(10)&"binaire code adress x1,x2,x3,x4,x5,x6,x7,
'
    Application.Run MacroName:="frm1"
End Sub
Sub frm1()
'
' frm1 Macro
' if  x1,x2,x3,x4 ,x5,x6,x7,x8,x9 then register else  select ,,, end if select case  x1
and select x2 and  iteractive  execute  loop  for each  while  the  statemnt  " if  x1
then" x2 or" sub " block statemnt ,, arrays paraenthes declare , create consol mod
```

```
'


End Sub



VERSION 5.00
Begin {C62A69F0-16DC-11CE-9E98-00AA00574A4F} UserForm12
   Caption         =   "UserForm12"
   ClientHeight    =   8736
   ClientLeft      =   108
   ClientTop       =   456
   ClientWidth     =   19764
   OleObjectBlob   =   "UserForm computer x 1 tshingombe.frx":0000
   StartUpPosition =   1  'CenterOwner
   WhatsThisButton =   -1  'True
   WhatsThisHelp   =   -1  'True
End
Attribute VB_Name = "UserForm12"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
```

1 .12.15..1 topics :

1 AGI in Human-Machine Collaboration
Exploring how AGI can augment human capabilities and lead to new forms of collaboration.

Future Scenarios of AGI Development
Examining possible future scenarios

Topic: Retail and E-commerce in the Renewable Energy Sector

Renewable Energy Sector

An overview of the e-commerce landscape specifically tailored for renewable energy products, services, and solutions.

In 2023, the e-commerce landscape will be more closely intertwined with sustainability than ever before. Based on the content extracted from the provided article, here is a Key Takeaways

market, including key players, trends, and consumer

Targeted, flexible and co-ordinated policies can unlock the potential of e-commerce

The rise of the Internet in the 1990s fuelled the growth of e-commerce and put it on the agenda of policy makers worldwide. But the rapid pace at which digital transformation has progressed and the dynamism

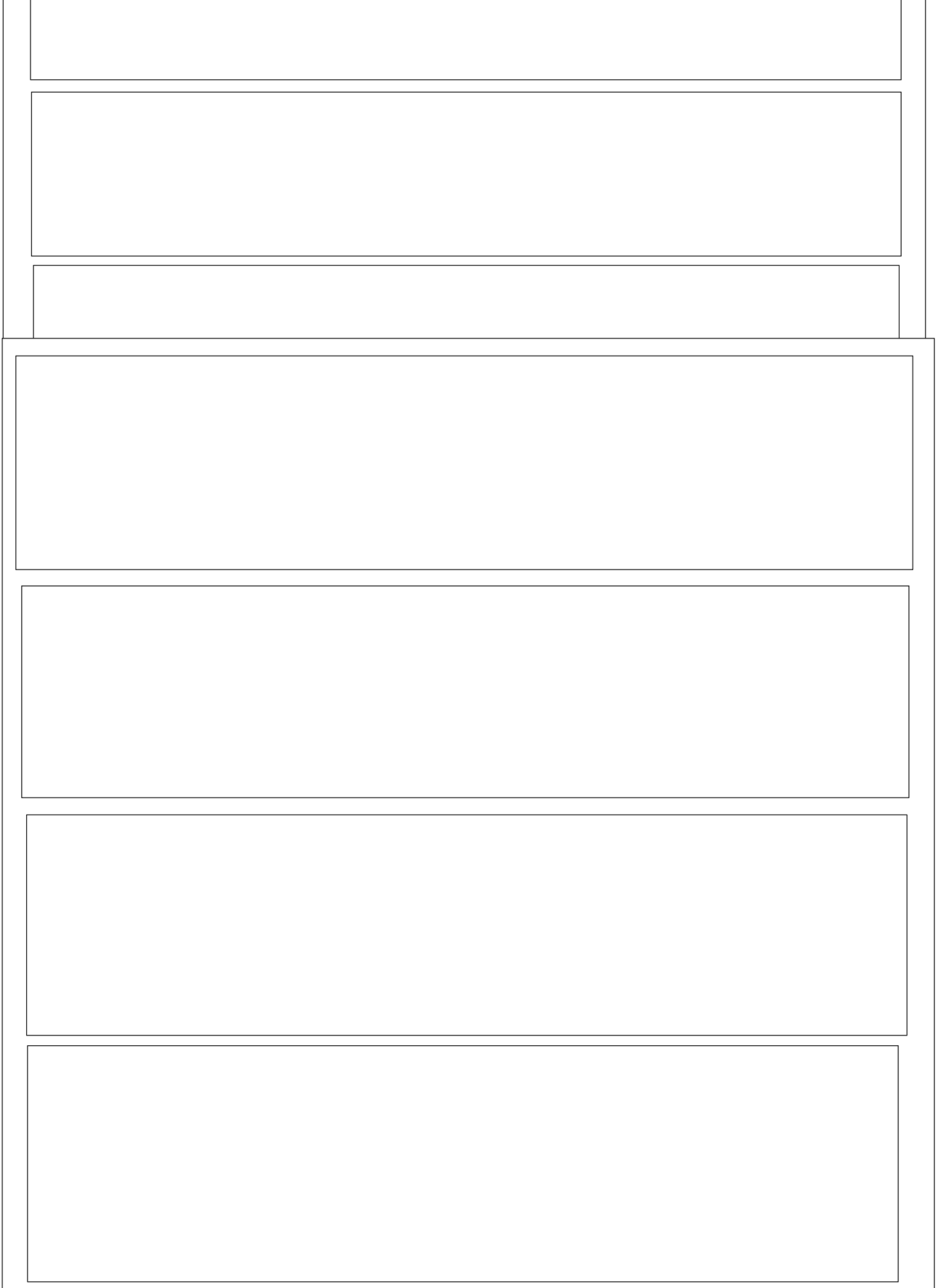
Products

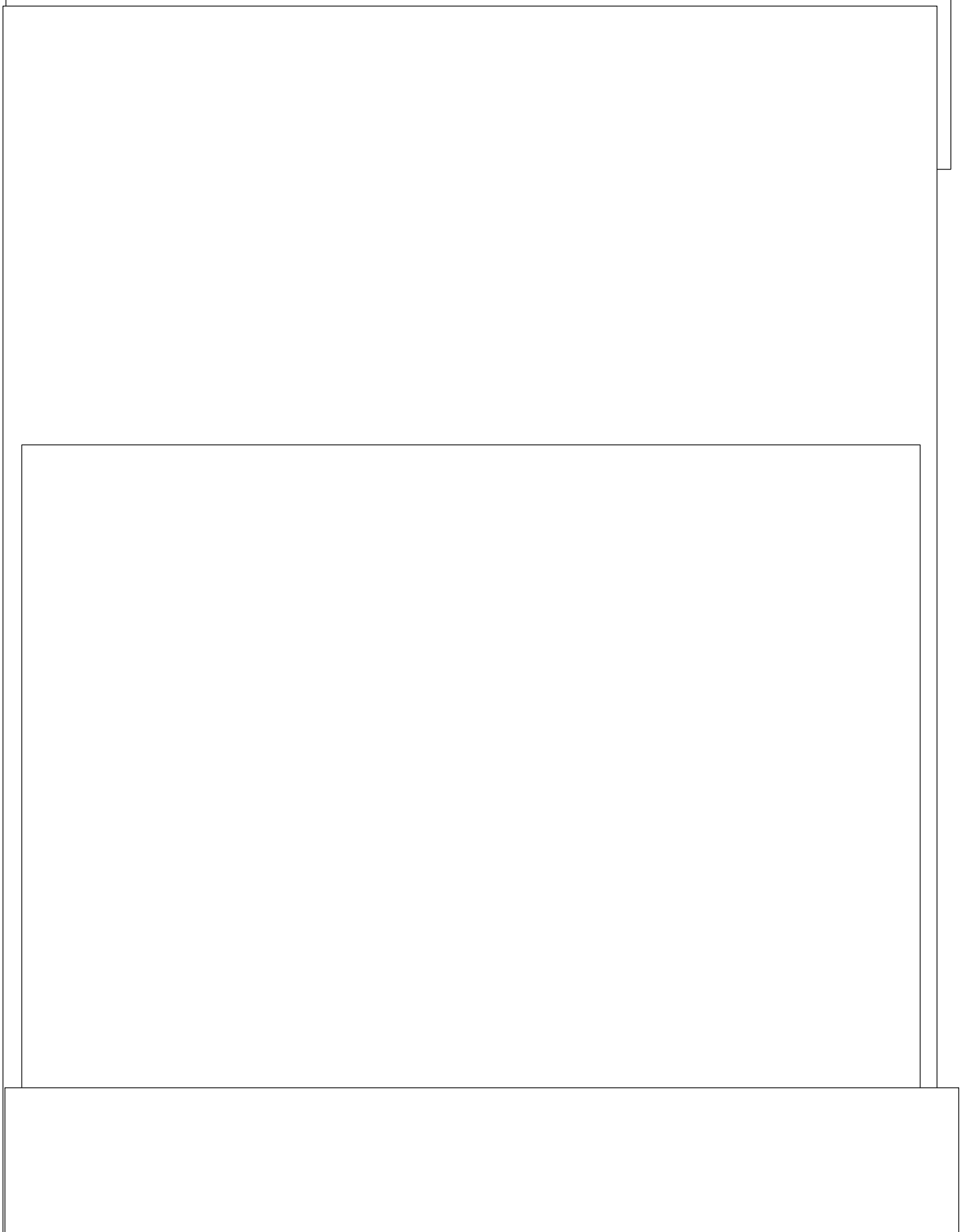
Effective e-commerce strategies tailored for marketing and selling renewable energy products online.

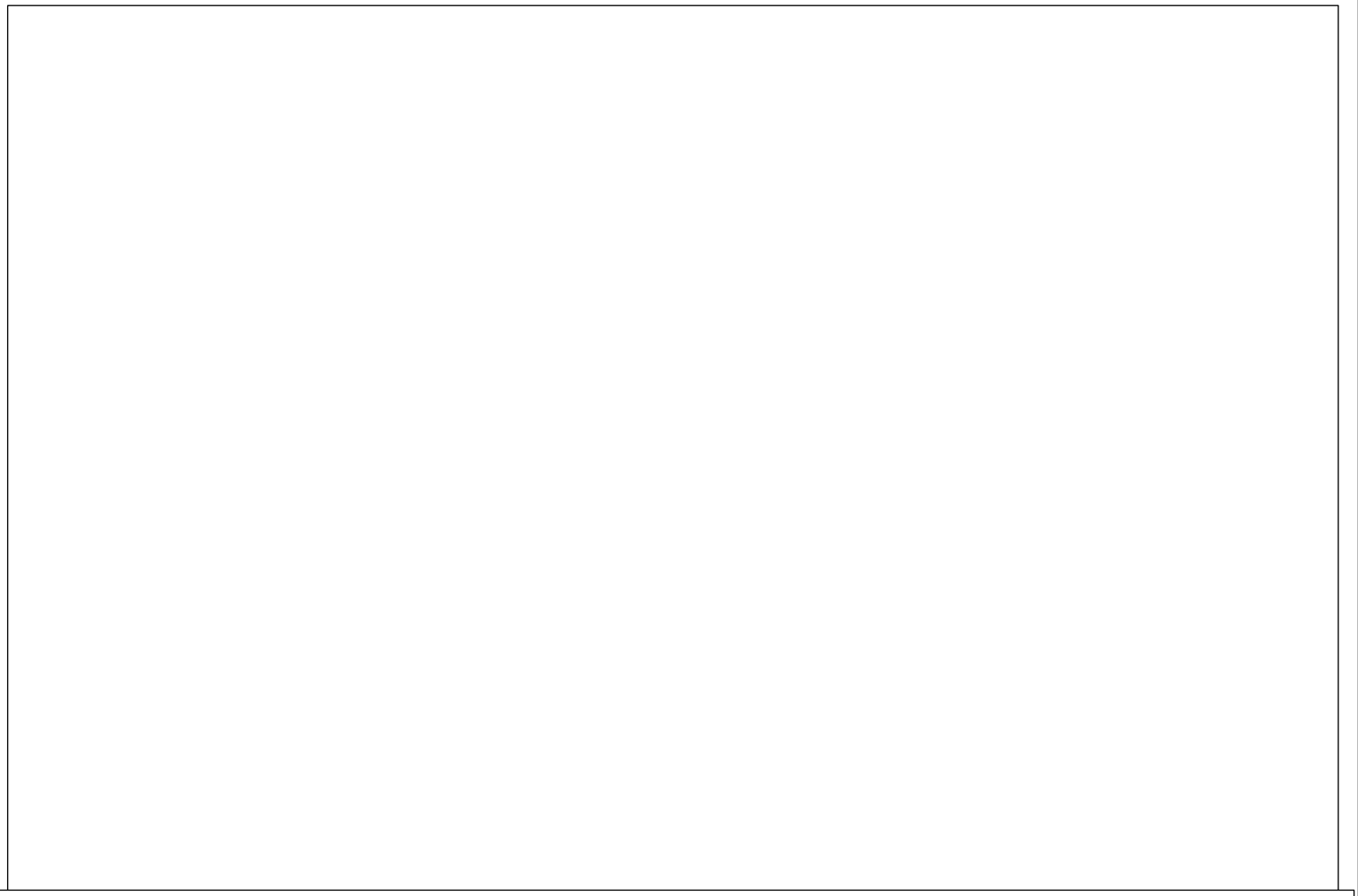
commerce must be better easured and e-commerce policy more co-ordinated to unlock the potential of e-commerce for all

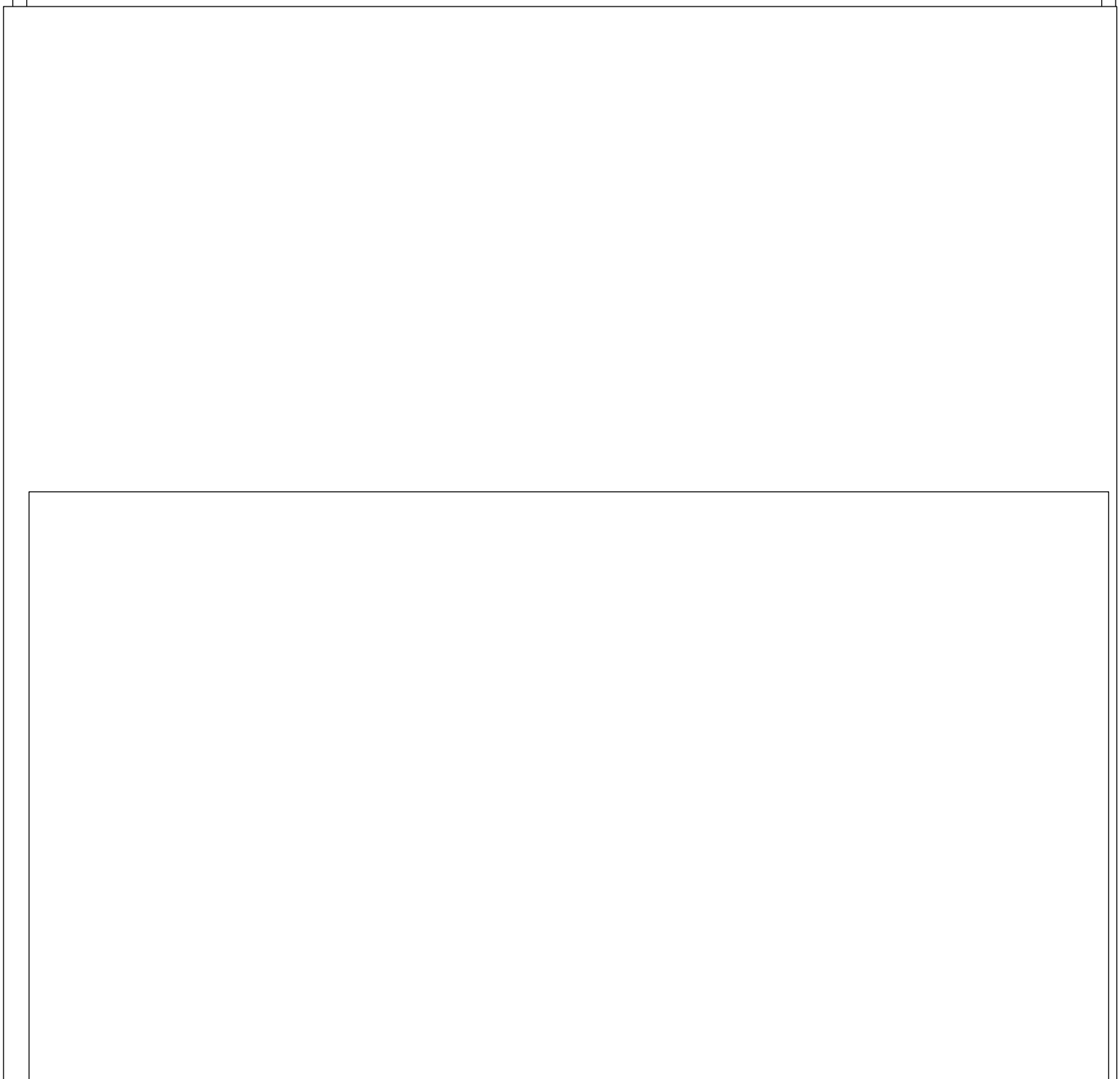
platforms.

E-commerce gaps for individuals remain significant along









7topics :

4.1 .12.15.7.1.Masters in Vertical Farming and Urban Agriculture with Focus on Synthetic Biolo

This course explores the intersection of vertical farming, urban agriculture, and synthetic biolo theoretical knowledge and practical skills to design and implement urban farming systems tha

7.2Introduction to Vertical Farming and Urban Agriculture

An overview of vertical farming and urban agriculture, their roles in modern food production, a agriculture, their roles in modern food production, and how they contribute to sustainability.

Key Topics:

- **Definitions and Concepts:** Understanding what vertical farming and urban agric
- **Historical Development:** Tracing the evolution of these farming techniques.
- **Sustainability Contributions:** How these methods reduce the carbon footprint a

7.3.Fundamentals of Synthetic Biology

Study the basic principles of synthetic biology, including DNA sequencing, genetic engineering

Synthetic Biology

Study the basic principles of synthetic biology, including DNA sequencing, genetic engineering

Key Topics:

- **Introduction to Synthetic Biology:** Basic concepts and terminology.
- **DNA Sequencing and Genetic Engineering:** Techniques and applications.
- **Plant Optimization:** How synthetic biology enhances plant growth and resilience

7.4..Applications of Synthetic Biology in Urban Agriculture

Explore how synthetic biology is revolutionizing urban farming, including genetically modified

7.6Design of Vertical Farming Systems

Learn the architectural and systems design principles for creating efficient vertical farms in ur genetically modified organisms (GMOs) and engineered biosystems that improve crop yield.

Key Topics:

- **GMOs in Urban Farming:** Benefits and challenges.
- **Engineered Biosystems:** Innovations that enhance productivity and sustainabili
- **Case Studies:** Examples of successful applications in urban agriculture.

7.7Integration of Biotechnology in Crop Production

Discuss the integration of biotechnology tools to enhance crop resilience, nutrient uptake, and and synthetic biology.

Key Topics:

- **Innovative Technologies:** Emerging tools and techniques.
- **Sustainability Goals:** Advancing towards more sustainable and resilient food sys
- **Research and Development:** Ongoing projects and future research directions.

These courses will provide students with a comprehensive understanding of the intersection b innovate and lead in the field of sustainable food production.

Feel free to ask if you need more details or specific information on any of these topics!

7.8.Environmental and Economic Impacts of Urban Agriculture

Evaluate the environmental and economic benefits and challenges posed by urban agriculture

7.9.Regulatory and Ethical Considerations in Synthetic Biology

Examine the regulatory frameworks and ethical considerations associated with the use of synt
globallyRegulatory frameworks for synthetic biology vary globally

7.10Future Trends in Vertical Farming and Synthetic Biology

Explore the potential future advancements in vertical farming technologies and synthetic biol
biology

8..topic

4.1 .12.15..8.Master's in Urban Water Supply, Sewerage, Waste Management, and Remediatio

8.1. This course delves into the complexities of urban infrastructure related to water supply, s
environmental, and policy-related aspects of effective urban planning necessary to manage th
challenges related to population growth, urbanization, and climate change in water and waste

8.2.Introduction to Urban Water Supply Systems

Explore the components of urban water supply systems, including water sourcing, treatment,
advancements in managing urban water supply.:

Explore the components of urban water supply systems, including water sourcing, treatment,
advancements in managing urban water supply.

Key Topics:

- **Water Sourcing:** Identifying and managing sources of water such as rivers, lakes
- **Water Treatment:** Processes for purifying water to meet safety and quality stan
- **Distribution Systems:** Designing and maintaining networks for efficient water d
- **Quality Management:** Monitoring and ensuring the quality of water supplied to

8.3 Sewerage Systems Design and Manage

8.3.Sewerage Systems Design and Management

Learn about the engineering, design, and operational management of urban sewerage system
recovery.: Sewerage Systems Design and Management

Learn about the engineering, design, and operational management of urban sewerage system
resource recovery.

Key Topics:

- **Engineering Principles:** Understanding the fundamentals of sewerage system d
- **Sustainable Practices:** Implementing environmentally friendly waste treatment
- **Resource Recovery:** Techniques for reclaiming and repurposing resources from

8.4.Urban Waste Management Strategies

Understand the principles and methods of waste management in urban areas, addressing : Ur
complexities and challenges of managing solid and liquid waste effectively.

Key Topics:

- **Waste Collection and Disposal:** Strategies for efficient waste collection, segreg
- **Recycling and Reuse:** Promoting recycling and reuse to minimize waste generat
- **Waste Reduction:** Implementing programs and policies to reduce overall waste

8.5.Remediation Activities and Technologies

Explore different technologies and methodologies used in the remediation of contaminated sit
water supply, sewerage, and waste management into urban planning processes to create mor

Key Topics:

- **Urban Planning Principles:** Incorporating water and waste considerations into u
- **Interdisciplinary Approaches:** Collaborating with various stakeholders for holis
- **Sustainable Development Goals:** Aligning urban planning with global sustainab

These courses provide a comprehensive understanding of urban water supply, sewerage, was
modern urban infrastructure.

If you need more details or have specific questions on any of these topics, feel free to let me k

8.6.Policy and Regulation in Urban Water and Waste

Gain insights into the regulatory frameworks and policies that govern urban water and waste
to effectively integrate water supply, sewerage, and waste management into urban planning p

Key Topics:

- **Urban Planning Principles:** Incorporating water and waste considerations into u
- **Interdisciplinary Approaches:** Collaborating with various stakeholders for holis
- **Sustainable Development Goals:** Aligning urban planning with global sustainab

These courses provide a comprehensive understanding of urban water supply, sewerage, was
modern urban infrastructure.

If you need more details or have specific questions on any of these topics, feel free to let me k

8.7.Climate Change and its Impact on Water and Waste Management

Examine how climate change affects urban water and waste systems and explore adaptive str

8.8..Sustainable Innovations in Water and Waste Systems

Discover emerging technologies and innovative practices for enhancing sustainability in urban
waste management systems involves adopting emerging technologies and innovative practice

Emerging Technologies:

1. **Smart Water Management Systems**
    - Utilize IoT sensors and real-time data analytics to monitor water quality, de
    - Implement smart meters to provide accurate water consumption data and
2. **Advanced Water Treatment Technologies**
    - Adopt membrane filtration, advanced oxidation processes, and nanotechno

1. Use desalination technologies to convert seawater into **aste-to-Energy Techno**
    - Convert organic waste into biogas through anaerobic digestion, reducing la
    - Implement gasification and pyrolysis to transform solid waste into syngas a

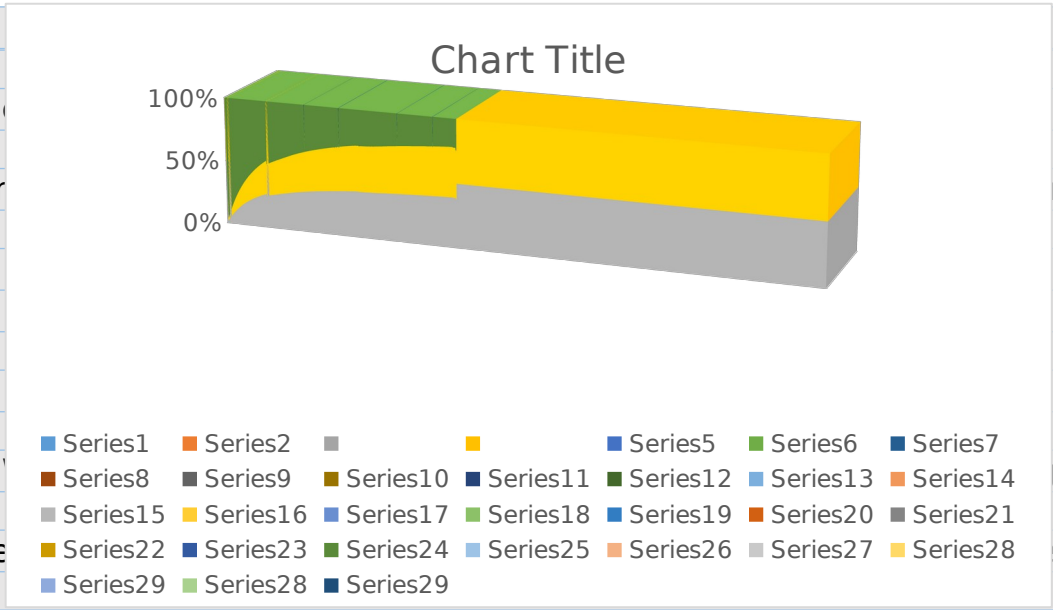
2. **Decentralized Wastewater Treatment**

- Develop decentralized systems that treat wastewater close to the source, r

consumption.

- Use constructed wetlands and natural treatment systems for cost-effective

3. **Green**



- Integrate

- Employ ur

Innovative Practices:

-

1. 8.9Integrating

- Adopt inte

- Use spatial planning tools to optimize the placement of water and waste fa

2. **Sustainable Development Goals (SDGs)**

- Align urban planning efforts with the United Nations Sustainable Developm

(Sustainable Cities and Communities).

- Promote sustainable land use practices that protect water resources and re

3. **Interdisciplinary Collaboration**

- Foster collaboration among urban planners, engineers, environmental scien

- Engage stakeholders, including local communities, businesses, and NGOs, i

4. **Climate Resilience and Adaptation**

- Incorporate climate resilience measures into urban planning to address the

- Develop adaptive strategies to manage extreme weather events, such as fl

5. **Green and Blue Infrastructure Integration**

- Integrate green infrastructure (e.g., parks, green roofs) and blue infrastruct

and improve water management.

- Design urban spaces that promote natural water infiltration, reduce runoff,

6. **Data-Driven Decision Making**

- Utilize Geographic Information Systems (GIS), remote sensing, and data an
- Implement smart city technologies to enhance the management and opera

By adopting these strategies and embracing innovative technologies, urban planners can crea
and waste systems.

If you have any specific questions or need more detailed information on any of these topics, fe

Learn how to effectively integrate water supply, sewerage, and waste management into urban

9.topic

4.1 .12.15..9.1.Transportation and Warehousing in Tourism Planning and Development

This course offers a comprehensive study into how transportation and warehousing play a cru
infrastructure, and management strategies required to optimize tourism supply chains, impro
transportation modes, warehousing solutions, and policy frameworks essential for sustainable

9.2..Introduction to Tourism Logistics

Explores the fundamental principles of logistics management within the tourism sector, emph

- **Air Travel:** Managing airport logistics, flight scheduling, and passenger services.
- **Rail and Road Transport:** Coordinating bus and rail services for tourists, ensurin
- **Maritime Travel:** Organizing ferry and cruise services, port management.

· **Warehousing Solutions**

- **Storage Facilities:** Designing and managing warehouses for tourism-related goo
- **Inventory Management:** Techniques for maintaining op

9.3...Transportation Infrastructure in Tourism

Examines the various transportation infrastructures such as airports, seaports, and road netw

- **Regulatory Compliance:** Understanding laws and regulations affecting transpor
- **Sustainability Policies:** Implementing eco-friendly practices to minimize enviro

9.4..Role of Warehousing in Tourism

Discusses how warehousing and inventory management contribute to the efficiency of tourism

- **Supply Chain Management:** Strategies for efficient coordination of suppliers, tr
- **Infrastructure Development:** Planning and constructing facilities to support tou
- **Technology Integration:** Using digital tools for tracking, scheduling, and manag

9.5..Sustainable Transport Solutions

Covers sustainable practices and innovations in transportation that minimize environmental i

- **Barrier-Free Travel:** Designing inclusive transportation systems for travelers wit
- **Connectivity Enhancement:** Ensuring seamless transitions between different m

9.6..Tourism Supply Chain Management

Analyzes the intricacies of supply chain management specifically in the tourism sector, includi

- **Definition and Scope:** Understanding what tourism logistics encompasses.
- **Key Components:** Identifying the main elements of tourism logistics, such as tra

· **Role in Seamless Travel Experiences**

- **Customer Satisfaction:** Ensuring tourists have smooth and enjoyable experienc

- **Efficiency and Reliability:** Improving the efficiency and reliability of travel servi

9.7.Policy and Regulations in Tourism Transport

Explores the regulations and policies affecting transportation and warehousing, and how they

- **Seasonal Demand:** Managing fluctuations in demand due to tourist seasons.
- **Coordination Complexity:** Overcoming challenges in coordinating multiple serv

· **Technological Advancements**

- **Digital Solutions:** Utilizing technology to streamline logistics processes, such as
- **Data Analytics:** Leveraging data to predict trends, optimize routes, and improve

9.8.Innovations in Tourism Warehousing

Investigates recent technological advancements in warehousing that support tourism industry

This section investigates recent technological advancements in warehousing that support the

Technological Advancements:

1. **Smart Warehousing:** Automation and AI-driven inventory management systen

9.9..Case Studies on Tourism and Logistics

Presents case studies highlighting logistics success and challenges in various tourism destinat
various tourism destinations. Some examples include:

Case Studies:

1. **Public Policy Co-Creation in Recife:** Examines the creative tourism plan deve

---

10.topics

4.1 .12.15.10.1..Spatial Computing in Telecommunications

This course explores the integration of spatial computing technologies within the telecommun
network efficiencies, improve service delivery, and innovate telecommunications solutions. Co
aiming to lead in the evolution of telecom networks through spatial computing innovations.

10.2..Introduction to Spatial Computing

This topic covers the basics of spatial computing, its historical evolution, and its current impor

Key Topics:

1. **Foundational Concepts**
    - **Spatial Data:** Understanding the types of spatial data, including geograph
    - **Spatial Computing Principles:** Basic principles of spatial computing, incl
2. **Network Efficiencies**
    - **Optimizing Network Design:** Utilizing spatial data to design more efficie

10.3..Spatial Data and Telecommunications

An exploration of the types and sources of spatial data utilized in telecommunications, as w

Resource Allocation: Applying spatial analysis to optimize the allocation of netwo

· **Service Delivery Improvements**

Location-Based Services: Enhancing service delivery through the integration of location-b

Coverage Mapping: Using spatial data to identify coverage gaps and optimize network co

10.4..Geographical Information Systems (GIS) in Telecom

This topic discusses the application of GIS technologies for network planning, resource optimiz

- **Smart Cities:** Leveraging spatial computing to develop smart city solutions that i
- **Augmented Reality (AR) and Virtual Reality (VR):** Exploring the applications

experiences and virtual site inspections.

10.5..Network Planning and Optimization Using Spatial Computing

Strategies for using spatial computing to optimize telecom network deployments and enhance

10.6.Spatial Data Analytics for Telecom

An examination of analytic techniques and algorithms that leverage spatial data to provide ins

Applications

- **5G and Beyond:** Investigating the role of spatial computing in the deployment ar

- **Predictive Analytics:** Using spatial data for predictive analytics to anticipate net

10.7..Augmented Reality (AR) in Telecommunication Services

Understanding the role of AR technologies in enhancing customer experiences and operationa
historical evolution, and its current importance across various industries, with a particular focu

Key Topics:

1. **Basics of Spatial Computing**
    - **Definition and Scope:** Understanding what spatial computing entails and
    - **Key Components:** Identifying the main elements of spatial computing, su
2. **Historical Evolution**
    - **Early Developments:** Tracing the origins of spatial computing from early
    - **Technological Advancements:** Highlighting key technological advancem

10.11..5G and Spatial Computing

1. Investigating how 5G technology benefits from spatial computing, including prec
    - **Cross-Industry Applications:** Exploring how spatial computing is used in
    - **Focus on Telecommunications:** Examining the specific applications of sp

optimization, and location-based services.

These courses provide students with a comprehensive understanding of spatial computing an
and optimization of telecom networks.

If you have any specific questions or need more details on a

10.12..Privacy and Security in Spatial Telecommunications

A look into the potential security and privacy challenges posed by spatial data in telecommun

Key Challenges:

1. **Data Privacy Concerns**: The extensive collection and transmission of spatial d

11..topics

4.1 .12.15..11.1..Advanced Legal Studies in Public Administration and Safety

This course is designed for Master's level students pursuing a degree in Public Administration understanding of the legal frameworks and principles that underpin public administration and administrative law to policy-making and legal ethics, equipping students with the skills needed

11.2Introduction to Public Law

An overview of the principles and functions of public law, including constitutional and administ

An overview of the principles and functions of public law, including constitutional and administ

Key Topics:

- **Principles of Public Law:** Understanding the foundational concepts of public law
- **Constitutional Law:** Examining the structure and functions of the constitution in
- **Administrative Law:** Exploring the rules that govern the actions of administrativ

11.3.Constitutional Law and Governance

Exploration of constitutional principles and how they guide governance and the formation of p formation of public policies.

Key Topics:

- **Constitutional Principles:** Understanding fundamental principles like the rule of
- **Governance:** Analyzing how constitutional principles influence the design and fu
- **Public Policy Formation:** Examining the role of constitutional law in shaping pul

11.4.Administrative Law

Understanding the rules and regulations that govern the activities of administrative agencies administrative agencies of government.

Key Topics:

- **Administrative Agencies:** Exploring the creation, powers, and functions of admi

- **Regulatory Frameworks:** Understanding the legal frameworks that regulate adr
- **Judicial Review:** Examining the mechanisms for reviewing administrative decisio

11.5.Legal Frameworks for Public Safety

Examination of the legal structures and policies designed to protect public safety and maintai

11.6..Ethics in Public Administration

Study of ethical principles and how they apply to decision-making processes in public adminis
public safety and maintain order.

Key Topics:

- **Public Safety Laws:** Analyzing laws and regulations aimed at protecting public s
- **Policy Development:** Understanding the process of developing and implementin
- **Enforcement Mechanisms:** Exploring the role of law enforcement agencies in m

11.7..Public Policy and Legal Implications

Analysis of the intersection of law and public policy and the impact of legal frameworks on pol
processes in public administration.

Key Topics:

- **Ethical Theories:** Understanding various ethical theories and their application in
- **Decision-Making:** Examining ethical considerations in decision-making processe
- **Accountability:** Exploring mechanisms for ensuring ethical conduct and accounta

Analysis of the intersection of law and public policy and the impact of legal frameworks on pol

Key Topics:

- **Law and Policy:** Understanding the relationship between legal frameworks and p
- **Policy Analysis:** Examining the legal implications of policy decisions.
- **Case Studies:** Analyzing real-world examples of law influencing public policy

11.8..Human Rights and Social Justice

Understanding the role of law in promoting human rights and social justice in public administr
in public administration.

Key Topics:

- **Human Rights Law:** Exploring international and domestic human rights framewo
- **Social Justice:** Examining the role of law in addressing social inequalities and pro
- **Advocacy:** Understanding the

11.9.Crisis Management and Legal Compliance

Strategies for managing crises in public administration while ensuring compliance with legal s
compliance, and maintaining order.

Key Topics:

- **Crisis Management:** Developing strategies for effectively managing crises in pu
- **Legal Compliance:** Ensuring adherence to legal frameworks during crisis situatio
- **Contingency Planning:** Creating plans for maintaining public safety and order d

These courses provide students with a comprehensive understanding of the legal aspects of p
landscape in the public sector.

If you have any specific questions or need more details on any of these topics, feel free t

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12.topic

4.1 .12.15..12.1Metallurgy in Oil and Gas Production, Refining, and Transport

This course provides an in-depth understanding of the metallurgical principles and practices s
performance of metals used in various segments of the industry, focusing on their application
comprehensive knowledge of material selection and corrosion prevention in harsh oil and gas

12.2..Introduction to Metallurgy in Oil and Gas

An overview of the role of metallurgy in the oil and gas industry, discussing the importance of

his course provides an in-depth understanding of the metallurgical principles and practices sp
performance of metals used in various segments of the industry, focusing on their application
comprehensive knowledge of material selection and corrosion prevention in harsh oil and gas

12.3..Material Selection for Oil and Gas Production

Examines criteria for selecting materials, focusing on mechanical properties and corrosion res

An overview of the role of metallurgy in the oil and gas industry, discussing the importance of

Key Topics:

- **Role of Metallurgy:** Understanding the critical importance of metallurgy in oil ar
- **Material Selection:** Factors influencing the selection of materials for different se
- **Common Challenges:** Identifying and addressing common metallurgical issues,

12.4..Corrosion Mechanisms and Prevention

Explores common corrosion mechanisms in oil and gas environments, such as sulfide stress cr
criteria for selecting materials, focusing on mechanical properties and corrosion resistance re

Key Topics:

- **Mechanical Properties:** Evaluating the strength, toughness, and durability of m
- **Corrosion Resistance:** Understanding the importance of corrosion resistance in
- **Material Criteria:** Criteria for selecting suitable materials for production equipme

12.5..Metallurgical Processes in Refining

Discusses how metallurgical processes like heat treatment and welding are utilized in refining
Prevention

Explores common corrosion mechanisms in oil and gas environments, such as sulfide stress cr

Key Topics:

- **Corrosion Mechanisms:** Understanding different types of corrosion and their ca
- **Sulfide Stress Cracking:** Examining how sulfide stress cracking occurs and how
- **Chloride Stress Corrosion:** Exploring the effects of chloride stress corrosion an

12.6..Pipeline Materials and Design

Addresses the materials and design considerations for constructing oil and gas pipelines, inclu
processes like heat treatment and welding are utilized in refining operations to enhance mate

Key Topics:

- **Heat Treatment:** Techniques for enhancing the mechanical properties of metals
- **Welding:** Best practices for welding in refining operations.
- **Material Enhancement:** Methods for improving the performance and longevity o

12.7.Advanced Coatings and Surface Treatments

Focuses on the application of advanced coatings and surface treatments to protect metals use
for constructing oil and gas pipelines, including the assessment of failure modes and maintena

Key Topics:

- **Material Selection for Pipelines:** Criteria for selecting materials for pipeline co
- **Pipeline Design:** Principles of pipeline design to ensure safety and reliability.
- **Failure Modes:** Identifying common failure modes and strategies for prevention.
- **Maintenance Practices:** Best practices for maintaining pipeline integrity

Advanced Coatings and Surface Treatments

Focuses on the application of advanced coatings and surface treatments to protect metals use

Key Topics:

- **Coating Technologies:** Exploring different types of coatings and their applicatio
- **Surface Treatments:** Techniques for treating metal surfaces to enhance durabili
- **Protective Measures:** Implementing protective measures to extend the lifespan

12.8.Environmental Impact and Sustainability in Metallurgy

Evaluates the environmental impact of metallurgical practices in the oil and gas industry and
metallurgical practices in the oil and gas industry and explores sustainable practices and inno

Key Topics:

- **Environmental Impact:** Assessing the environmental consequences of metallurg
- **Sustainable Practices:** Implementing eco-friendly practices in metallurgy.
- **Innovations:** Exploring technological innovations for reducing environmental imp

12.9..Failure Analysis and Case Studies

Explores methods for conducting failure analysis on metallurgical components and reviews rea
and gas industry and explores sustainable practices and innovations.

Key Topics:

- **Environmental Impact:** Assessing the environmental consequences of metallurg
- **Sustainable Practices:** Implementing eco-friendly practices in metallurgy.
- **Innovations:** Exploring technological innovations for reducing environmental imp

Explores methods for conducting failure analysis on metallurgical components and reviews rea

Key Topics:

- **Failure Analysis Techniques:** Methods for analyzing and diagnosing material fa
- **Case Studies:** Reviewing real-world examples of metallurgical failures and the le
- **Preventive Measures:** Developing strategies to prevent future failur

12.10Future Trends in Metallurgy for Oil and Gas

Discusses emerging trends and technological advancements in metallurgy that could shape th
advancements in metallurgy that could shape the future of the oil and gas industry.

Key Topics:

- **Emerging Technologies:** Exploring new technologies and their potential impact
- **Industry Trends:** Identifying trends that are likely to influence the future of meta
- **Research and Development:** Current and future research initiatives aimed at a

These courses provide a comprehensive understanding of metallurgical principles and practice necessary to address the unique challenges of this field.

If you need more details or specific information on any of these topics, feel fr

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13.Topics:

4.1 .12.15..13.1.Integrated Water Management in Mining

This course provides an in-depth analysis of integrated water management practices within th focusing on balancing economic, environmental, and societal needs. The course examines tec with the knowledge and skills necessary for effective water management in mining operations

13.2.Introduction to Mining Water Management

Overview of water use in mining operations, including extraction, processing, and remediation sustainable mining.

13.2.Water Resource Evaluation and Planning

Methods for evaluating water resources at mining sites, including hydrological assessments ar management.

13.3.Water Quality Management in Mining

Techniques for monitoring and managing water quality in mining contexts, including treatmen

13.4.Regulatory and Environmental Compliance

An overview of legal frameworks and environmental regulations affecting water use in mining

13.5.Innovation and Technology in Water Management

Examination of advanced technologies and innovative approaches in water management, such

13.6.Stakeholder Engagement and Social License

The importance of engaging with stakeholders and communities regarding water managemen

13.7..Climate Change Impacts on Water Resources

Analyzes the effects of climate change on water availability and management in mining opera

13.8.Case Studies and Best Practices

Review of real-world examples of successful water management in mining operations. Discuss

13.7.Future Trends in Mining Water Management

Explores anticipated future developments in water management technologies and policies in r

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13.2 Introduction to Mining Water Management

Overview of water use in mining operations, including extraction, processing, and remediation
sustainable mining.

Key Topics:

- **Water Use in Mining:** Understanding the various stages of water use in mining o
- **Integrated Water Management:** The importance of a holistic approach to mana
- **Significance in Sustainable Mining:** How integrated water management contri

13.3 Water Resource Evaluation and Planning

Methods for evaluating water resources at mining sites, including hydrological assessments ar
management.

Key Topics:

- **Hydrological Assessments:** Techniques for assessing the availability and qualit
- **Water Balance Studies:** Understanding the inputs and outputs of water within n
- **Planning Frameworks:** Developing comprehensive plans for sustainable water r

13.4 Water Quality Management in Mining

Techniques for monitoring and managing water quality in mining contexts, including treatmen

Key Topics:

- **Water Quality Monitoring:** Methods for regularly assessing water quality.
- **Treatment Technologies:** Exploring technologies for treating contaminated wat
- **Pollution Control:** Strategies for preventing and controlling pollution in mining e

13.5 Regulatory and Environmental Compliance

An overview of legal frameworks and environmental regulations affecting water use in mining

Key Topics:

- **Legal Frameworks:** Understanding the regulations governing water use in minin

- **Environmental Compliance:** Ensuring mining operations adhere to environment

- **Reporting Requirements:** Developing strategies for meeting regulatory reportir

13.6 Innovation and Technology in Water Management

Examination of advanced technologies and innovative approaches in water management, such

Key Topics:

- **Desalination:** Using desalination technology to provide fresh water for mining op

- **Water Recycling:** Implementing recycling systems to reduce water consumption

- **Smart Water Systems:** Leveraging digital technologies to optimize water manag

13.7 Stakeholder Engagement and Social License

The importance of engaging with stakeholders and communities regarding water management

Key Topics:

- **Stakeholder Engagement:** Techniques for effectively engaging with stakeholde

- **Community Involvement:** Involving local communities in water management de

- **Social License to Operate:** Building and maintaining trust with stakeholders.

13.8 Climate Change Impacts on Water Resources

Analyzes the effects of climate change on water availability and management in mining opera

Key Topics:

- **Climate Change Effects:** Understanding how climate change impacts water resc

- **Adaptation Strategies:** Developing strategies to adapt to changing water availa

- **Risk Minimization:** Implementing measures to minimize risks associated with cli

13.9 Case Studies and Best Practices

Review of real-world examples of successful water management in mining operations. Discuss

Key Topics:

- **Successful Case Studies:** Examining examples of effective water management

- **Lessons Learned:** Identifying key takeaways from real-world cases.

- **Best Practices:** Establishing best practices for water management in mining.

13.10 Future Trends in Mining Water Management

Explores anticipated future developments in water management technologies and policies in r

Key Topics:

- **Emerging Technologies:** Investigating new technologies for water management
- **Policy Developments:** Understanding how policies may evolve to support sustai
- **Future Directions:** Exploring potential future trends in water management for m

These courses provide a comprehensive understanding of integrated water management in th sustainable and effective water management practices.

If you need more details or specific information on any of these topics, feel free to ask!

14.topic

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15.topics

4.1 .12.15..15.1.Advanced Manufacturing Techniques in Genetic Engineering

This course explores the convergence of manufacturing processes and genetic engineering ad engineered products. Students will gain deep insights into techniques used to enhance manuf

15.2.Introduction to Genetic Engineering

Provides a foundational understanding of genetic engineering principles, techniques, and its a

15.3..Manufacturing Processes in Biotechnology

Covers traditional and innovative manufacturing processes used in biotechnology, essential fo

15.4..CRISPR and Advanced Genetic Modification Techniques

An in-depth look at cutting-edge genetic modification techniques such as CRISPR, which are re

15.5.Ethical and Regulatory Considerations

Discusses the ethical dilemmas and regulatory framework governing genetic engineering and

15.6.Biopharmaceutical Manufacturing

Explores the manufacturing techniques specific to biopharmaceuticals produced through gene

15.7.Fermentation Technology

Focuses on fermentation processes used in manufacturing biologically engineered products.

15.8..Scale-Up and Commercialization

Discusses the challenges and strategies involved in scaling genetic engineering products from

15.9.Quality Control in Genetically Engineered Products

Examines the quality control methodologies specific to genetic engineering industries.

15.10.Future Trends in Genetic Engineering Manufacturing

Looks ahead at emerging trends and technologies that are poised to influence the genetic eng

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15.10.Future Trends in Genetic Engineering Manufacturing

Looks ahead at emerging trends and technologies that are poised to influence the genetic eng

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16.topics

4.1 .12.15.16.1.Data Processing and Hosting Services in Computer Engineering

This course is designed for graduate students pursuing a Master's degree in Computer Engine
concepts, methodologies, and applications in managing and processing vast amounts of data,

16.2.Introduction to Data Processing

An overview of data processing concepts including data collection, cleaning, transformation, a

16.3.Cloud Hosting Services

Understanding cloud hosting fundamentals including types of cloud services, deployment mod

16.4..Big Data Technologies

Exploring the tools and technologies used for processing and managing big data such as Hadc

16.5Data Security in Cloud Hosting

An in-depth look into data security practices in cloud hosting environments, including encrypti

16.6.Containerization and Microservices

Understanding containerization technologies like Docker and Kubernetes and their role in host

16.7Distributed Systems

Study of distributed computing systems architecture, design, and management.

16.8.Data Warehousing and Analytics

Techniques and tools used to design data warehouses and leverage analytics for business inte

16.9..Serverless Computing

Exploration of serverless computing models and their application in data hosting services.

4.1 .12.15..16.1 Data Processing and Hosting Services in Computer Engineering

This course is designed for graduate students pursuing a Master's degree in Computer Engine
concepts, methodologies, and applications in managing and processing vast amounts of data,

16.2 Introduction to Data Processing

An overview of data processing concepts including data collection, cleaning, transformation, a

Key Topics:

- **Data Collection:** Methods and tools for gathering data from various sources.
- **Data Cleaning:** Techniques for identifying and correcting errors in data sets.
- **Data Transformation:** Processes for converting data into a usable format.
- **Data Storage:** Solutions for storing large volumes of data efficiently.

16.3 Cloud Hosting Services

Understanding cloud hosting fundamentals including types of cloud services, deployment mod

Key Topics:

- **Types of Cloud Services:** Infrastructure as a Service (IaaS), Platform as a Servic
- **Deployment Models:** Public cloud, private cloud, and hybrid cloud.
- **Scalability:** Techniques for scaling cloud resources to meet demand.

16.4 Big Data Technologies

Exploring the tools and technologies used for processing and managing big data such as Hadc

Key Topics:

- **Hadoop:** Overview of the Hadoop ecosystem and its components.
- **Spark:** Understanding Apache Spark and its use in big data processing.
- **Big Data Frameworks:** Comparing different frameworks and their applications.

16.5 Data Security in Cloud Hosting

An in-depth look into data security practices in cloud hosting environments, including encrypti

Key Topics:

- **Encryption:** Techniques for encrypting data at rest and in transit.
- **Access Management:** Strategies for managing user access and permissions.
- **Security Protocols:** Implementing security protocols to protect data in the cloud

16.6 Containerization and Microservices

Understanding containerization technologies like Docker and Kubernetes and their role in host

Key Topics:

- **Docker:** Basics of Docker and containerization.
- **Kubernetes:** Orchestration of containerized applications using Kubernetes.
- **Microservices Architecture:** Designing applications using microservices for sca

16.7 Distributed Systems

Study of distributed computing systems architecture, design, and management.

Key Topics:

- **Distributed Computing:** Principles and challenges of distributed systems.
- **System Architecture:** Designing and managing distributed system architectures
- **Consistency and Fault Tolerance:** Ensuring consistency and reliability in distrib

16.8 Data Warehousing and Analytics

Techniques and tools used to design data warehouses and leverage analytics for business inte

Key Topics:

- **Data Warehousing:** Design and implementation of data warehouses.
- **ETL Processes:** Extract, Transform, Load processes for data warehousing.
- **Business Intelligence:** Leveraging analytics for decision-making and insights.

16.9 Serverless Computing

Exploration of serverless computing models and their application in data hosting services.

Key Topics:

- **Serverless Models:** Understanding Function as a Service (FaaS) and Backend as
- **Benefits of Serverless:** Scalability, cost-efficiency, and simplified management.
- **Use Cases:** Real-world applications of serverless computing.

These topics provide a comprehensive understanding of data processing and hosting services process vast amounts of data effectively.

If you have any specific questions or need more details on a

17.topics

4.1 .12.15..17.1.Masters in Cryptocurrency and Blockchain Applications

This course provides an in-depth exploration of blockchain technology and digital currency. St application of cryptocurrencies, and various real-world applications. Emphasis will be placed o smart contracts.

17.2.Introduction to Blockchain Technology

Learn the fundamentals of blockchain technology, including its history, key concepts, and how

17.2.Cryptocurrencies: An Overview

Understand the various types of cryptocurrencies, their functions, and the economics underlyi

17.3.Blockchain Consensus Mechanisms

Explore how consensus mechanisms like Proof of Work, Proof of Stake, and others operate wit

17.4..Smart Contracts

Learn about smart contracts, their capabilities, use cases, and limitations. Understand how the

17.5.Decentralized Finance (DeFi)

Explore the growth of DeFi platforms and how they are revolutionizing traditional financial sys

17.6.Blockchain in Supply Chain Management

Understand how blockchain technology is applied in supply chain management to enhance tra

17.7.Regulation and Compliance in Blockchain

Study the regulatory landscape surrounding blockchain technology and cryptocurrencies, inclu

17.8.NFTs and Digital Assets

Explore the world of Non-Fungible Tokens (NFTs), their creation, market dynamics, and how th

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17.1 Masters in Cryptocurrency and Blockchain Applications

This course provides an in-depth exploration of blockchain technology and digital currency. St
application of cryptocurrencies, and various real-world applications. Emphasis will be placed o
smart contracts.

17.2 Introduction to Blockchain Technology

Learn the fundamentals of blockchain technology, including its history, key concepts, and how

Key Topics:

- **History of Blockchain:** Tracing the origins and evolution of blockchain technolog
- **Key Concepts:** Understanding blocks, chains, nodes, and consensus mechanisms
- **Differences from Traditional Databases:** Comparing blockchain to centralized

17.3 Cryptocurrencies: An Overview

Understand the various types of cryptocurrencies, their functions, and the economics underlyi

Key Topics:

- **Types of Cryptocurrencies:** Bitcoin, Ethereum, altcoins, and stablecoins.
- **Functions of Cryptocurrencies:** Medium of exchange, store of value, and inves
- **Economics of Digital Currencies:** Supply, demand, market capitalization, and p

17.4 Blockchain Consensus Mechanisms

Explore how consensus mechanisms like Proof of Work, Proof of Stake, and others operate wit

Key Topics:

- **Proof of Work (PoW):** Understanding the mining process, energy consumption,
- **Proof of Stake (PoS):** Staking, validators, and energy efficiency.
- **Alternative Consensus Mechanisms:** Delegated Proof of Stake (DPoS), Practica

17.5 Smart Contracts

Learn about smart contracts, their capabilities, use cases, and limitations. Understand how the

Key Topics:

- **Definition and Functionality:** What smart contracts are and how they work.
- **Use Cases:** Applications in finance, supply chain, real estate, and other industries
- **Limitations:** Challenges such as scalability, security vulnerabilities, and legal con

17.6 Decentralized Finance (DeFi)

Explore the growth of DeFi platforms and how they are revolutionizing traditional financial sys

Key Topics:

- **Overview of DeFi:** Understanding the principles and goals of decentralized finan
- **DeFi Platforms:** Popular platforms like Uniswap, Aave, and Compound.
- **Impact on Traditional Finance:** How DeFi is transforming lending, borrowing, tr

17.7 Blockchain in Supply Chain Management

Understand how blockchain technology is applied in supply chain management to enhance tra

Key Topics:

- **Transparency and Traceability:** How blockchain improves visibility and trackin
- **Efficiency Improvements:** Reducing fraud, errors, and delays in supply chain pr
- **Case Studies:** Real-world examples of blockchain applications in supply chain ma

17.8 Regulation and Compliance in Blockchain

Study the regulatory landscape surrounding blockchain technology and cryptocurrencies, inclu

Key Topics:

- **Regulatory Frameworks:** Understanding the legal regulations governing blockc
- **Compliance Requirements:** Ensuring compliance with anti-money laundering (A
- **Challenges and Opportunities:** Navigating the evolving regulatory environmen

17.9 NFTs and Digital Assets

Explore the world of Non-Fungible Tokens (NFTs), their creation, market dynamics, and how th

Key Topics:

- **Introduction to NFTs:** Understanding what NFTs are and how they work.
- **Market Dynamics:** Trends, marketplaces, and the economic aspects of NFTs.
- **Impact on Digital Ownership:** How NFTs are changing the landscape of digital a

These topics provide a comprehensive understanding of cryptocurrency and blockchain applic this rapidly evolving field.

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18 topic

4.1 .12.15.18.1.Advanced Cybersecurity in Bibliotechnology

This course explores the intersection of cybersecurity and bibliotechnology, focusing on protec about cybersecurity principles and practices specifically tailored for bibliotechnology, ensuring

18.2.Introduction to Cybersecurity in Bibliotechnology

An overview of the basic principles of cybersecurity and their importance in the domain of bib

18.3Threats and Vulnerabilities in Digital Libraries

Understanding the common cybersecurity threats and vulnerabilities unique to digital

18.4.Data Privacy and Integrity in Bibliotechnology

Exploring techniques to ensure data privacy and maintain data integrity for library users and t

18.5.Implementing Security Policies for Digital Libraries

Developing and applying security policies and frameworks tailored for digital libraries to safeg

18.6.Access Control in Library Networks

Examining access control mechanisms to secure user authentication and authorization within

18.7.Digital Rights Management in Bibliotechnology

Understanding digital rights management and its role in protecting digital content in bibliotech

18.8.Network Security Essentials for Digital Libraries

Learn the essentials of securing library networks, combating network-based threats, and imple

18.9.Incident Response and Recovery for Digital Libraries

Strategies for effectively responding to and recovering from cybersecurity incidents within dig

18..10Emerging Cybersecurity Technologies in Bibliotechnology

Explore the role of emerging technologies like AI and blockchain in enhancing cybersecurity in

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4.1 .12.15.18.1 Advanced Cybersecurity in Bibliotechnology

This course explores the intersection of cybersecurity and bibliotechnology, focusing on protec
about cybersecurity principles and practices specifically tailored for bibliotechnology, ensuring

18.2 Introduction to Cybersecurity in Bibliotechnology

An overview of the basic principles of cybersecurity and their importance in the domain of bib

Key Topics:

- **Cybersecurity Principles:** Basic concepts of cybersecurity such as confidentialit
- **Importance in Bibliotechnology:** Understanding why cybersecurity is crucial fo
- **Common Cyber Threats:** Identifying typical cyber threats that can affect bibliote

18.3 Threats and Vulnerabilities in Digital Libraries

Understanding the common cybersecurity threats and vulnerabilities unique to digital libraries

Key Topics:

- **Threat Landscape:** Overview of threats such as malware, phishing, and ransomw
- **Vulnerabilities:** Identifying and assessing vulnerabilities specific to digital library
- **Risk Assessment:** Techniques for evaluating and mitigating risks in digital librari

18.4 Data Privacy and Integrity in Bibliotechnology

Exploring techniques to ensure data privacy and maintain data integrity for library users and t

Key Topics:

- **Data Privacy Techniques:** Implementing privacy measures such as anonymizat
- **Data Integrity:** Ensuring that data remains accurate and unaltered through chec
- **User Data Protection:** Protecting sensitive information related to library users.

18.5 Implementing Security Policies for Digital Libraries

Developing and applying security policies and frameworks tailored for digital libraries to safeg

Key Topics:

- **Policy Development:** Crafting comprehensive security policies for digital librarie
- **Frameworks:** Utilizing existing security frameworks like ISO/IEC 27001.
- **Policy Enforcement:** Strategies for enforcing and maintaining security policies.

18.6 Access Control in Library Networks

Examining access control mechanisms to secure user authentication and authorization within

Key Topics:

- **Authentication Methods:** Techniques such as passwords, biometrics, and multi-
- **Authorization:** Ensuring proper access controls and role-based access within libr
- **Access Management Tools:** Using tools and software to manage access control

18.7 Digital Rights Management in Bibliotechnology

Understanding digital rights management (DRM) and its role in protecting digital content in bi

Key Topics:

- **DRM Principles:** Basic concepts and purposes of DRM.
- **DRM Technologies:** Tools and technologies used for implementing DRM in digita
- **Content Protection:** Strategies for protecting digital content from unauthorized

18.8 Network Security Essentials for Digital Libraries

Learn the essentials of securing library networks, combating network-based threats, and imple

Key Topics:

- **Network Security Fundamentals:** Understanding firewalls, intrusion detection/
- **Network Threats:** Identifying and mitigating threats such as DDoS attacks and m
- **Security Measures:** Best practices for securing network infrastructure in digital l

18.9 Incident Response and Recovery for Digital Libraries

Strategies for effectively responding to and recovering from cybersecurity incidents within dig

Key Topics:

- **Incident Response Planning:** Developing and implementing incident response

- **Recovery Techniques:** Strategies for recovering data and services after a cyber
- **Post-Incident Analysis:** Conducting root cause analysis and improving security

18.10 Emerging Cybersecurity Technologies in Bibliotechnology

Explore the role of emerging technologies like AI and other advanced tools in enhancing cyber

Key Topics:

- **AI in Cybersecurity:** Utilizing artificial intelligence for threat detection and respo
- **Blockchain Technology:** Applying blockchain for secure and transparent data m
- **Future Trends:** Exploring future trends and advancements in cybersecurity techn

These courses provide a comprehensive understanding of advanced cybersecurity principles a and bibliographic databases effectively

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19 topics

4.1 .12.15..19.1.1Edge Computing in Modern Power and Energy Systems

This course provides an in-depth exploration of edge computing technologies and their integra computing and how it can optimize energy distribution, improve grid reliability, and enhance e time data processing, IoT in energy systems, and security challenges.

19.2..Introduction to Edge Computing

An overview of edge computing and its significance in the modern power and energy sectors.

19.3.Distributed Computing in Energy Systems

Explores how distributed computing operates in energy systems to enhance performance, reli

19.4.IoT Applications in Power Systems

Discusses the role of IoT devices in modern power systems for data collection, analysis, and d

19.5.Real-time Data Processing

Focuses on techniques for real-time data processing at the edge, including algorithms and arc

19.6Security and Privacy in Edge Computing

Examines the security challenges in edge computing environments and how they impact ener

19.6.Edge Analytics for Energy Management

Investigates the use of edge analytics for optimizing energy management through predictive a

19.7.Energy Efficiency Optimization

Covers strategies for improving energy efficiency through edge computing technologies and s

19.8.Case Studies on Edge Computing in Energy

Presents real-world case studies to illustrate the deployment and impact of edge computing in

19.9.Future Trends in Edge Computing for Energy Systems

Explores future developments and potential advancements in edge computing applicable to p

19.1 Edge Computing in Modern Power and Energy Systems

This course provides an in-depth exploration of edge computing technologies and their integra computing and how it can optimize energy distribution, improve grid reliability, and enhance e time data processing, IoT in energy systems, and security challenges.

19.2 Introduction to Edge Computing

An overview of edge computing and its significance in the modern power and energy sectors.

Key Topics:

- **Edge Nodes:** Understanding the role of edge nodes in data processing.
- **Latency Reduction:** Techniques to reduce latency and improve response times.
- **System Efficiency:** Enhancing overall system efficiency through edge computing

19.3 Distributed Computing in Energy Systems

Explores how distributed computing operates in energy systems to enhance performance, reli

Key Topics:

- **Distributed Computing Principles:** Basics of distributed computing and its app
- **Performance Enhancement:** Improving system performance through distribute
- **Reliability and Efficiency:** Ensuring system reliability and operational efficiency

19.4 IoT Applications in Power Systems

Discusses the role of IoT devices in modern power systems for data collection, analysis, and d

Key Topics:

- **IoT Devices:** Types and functions of IoT devices in power systems.

- **Data Collection and Analysis:** Leveraging IoT for real-time data collection and a
- **Decision-Making:** Enhancing decision-making processes using IoT data.

19.5 Real-time Data Processing

Focuses on techniques for real-time data processing at the edge, including algorithms and arc

Key Topics:

- **Real-time Processing Techniques:** Algorithms and architectures for real-time d
- **Edge Processing:** Advantages and challenges of processing data at the edge.
- **Application in Energy Systems:** Implementing real-time data processing in ene

19.6 Security and Privacy in Edge Computing

Examines the security challenges in edge computing environments and how they impact ener

Key Topics:

- **Security Challenges:** Identifying security threats in edge computing environmen
- **Privacy Concerns:** Ensuring data privacy in distributed systems.
- **Mitigation Strategies:** Techniques for mitigating security and privacy risks.

19.7 Edge Analytics for Energy Management

Investigates the use of edge analytics for optimizing energy management through predictive a

Key Topics:

- **Edge Analytics:** Understanding edge analytics and its benefits.
- **Predictive Analytics:** Using predictive analytics for proactive energy manageme
- **Machine Learning:** Applying machine learning models to enhance energy efficie

19.8 Energy Efficiency Optimization

Covers strategies for improving energy efficiency through edge computing technologies and s

Key Topics:

- **Energy Optimization Techniques:** Methods for optimizing energy use.
- **Smart Grids:** Role of smart grids in energy efficiency.

- **Integration with Edge Computing:** How edge computing enhances energy opti

19.9 Case Studies on Edge Computing in Energy

Presents real-world case studies to illustrate the deployment and impact of edge computing in

Key Topics:

- **Case Studies:** Examples of successful edge computing implementations.
- **Deployment Challenges:** Overcoming challenges in deploying edge computing s
- **Impact Assessment:** Evaluating the impact of edge computing on energy manag

19.10 Future Trends in Edge Computing for Energy Systems

Explores future developments and potential advancements in edge computing applicable to p

Key Topics:

- **Emerging Technologies:** Future technologies that could shape edge computing.
- **Trends in Energy Systems:** Anticipating trends and advancements in energy m
- **Research and Development:** Ongoing and future research initiatives in edge co

These courses provide a comprehensive understanding of edge computing in modern power a distribution, improve grid reliability, and enhance energy management.

If you have any specific questions or need more details on any of these topics, feel free to ask

Edge Computing for Modern Power and Energy Systems

This advanced course explores the role and integration of edge computing technologies in mo and the impact of edge computing in enhancing efficiency, reliability, and sustainability in ene supplemented by interactive resources.

Introduction to Edge Computing

Understanding the basic concepts and architecture of edge computing, its significance in redu

Role of Edge Computing in Smart Grids

Exploring how edge computing supports smart grid operations including demand response, gr

Edge Computing for Renewable Energy Integration

Analyzing the integration of renewable energy sources into power grids using edge computing

Data Management and Security in Edge Computing

Understanding how data is managed and secured in edge computing systems, with a focus on

Machine Learning Applications on the Edge

Investigating the applications of machine learning in edge devices to predict and optimize ene

Case Studies in Edge Computing for Energy Systems

Reviewing real-world case studies to understand the implementation and outcomes of edge co

Challenges and Future Trends

Discussing the current challenges faced by edge computing in energy systems and predicting

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20 topics

4.1 .12.15..20.1.Masters in Cyber-Physical Systems and Information Technology

This course provides an in-depth understanding of Cyber-Physical Systems (CPS) within the re
students will gain insights into the integration, design, and application of CPS in various sector
to equip students with the skills necessary to innovate in this rapidly evolving field.

20.2.Introduction to Cyber-Physical Systems

This topic covers the basics of CPS, including definitions, history, and key concepts that disting

20.3.Architecture of CPS

Explore the architecture of CPS, focusing on sensors, actuators, control systems, and the role

20.4Networking and Communication in CPS

Understand the communication protocols and networks that enable interaction between cyber

20.5.CPS Security and Privacy

This topic delves into the security challenges in CPS and discusses methods to ensure data int

20.6.Machine Learning in CPS

Examine the role of machine learning in optimizing the performance and decision-making proc

20.7.Real-Time Systems and CPS

Learn about the real-time requirements of CPS and the design considerations necessary to me

20.8.Simulation and Modeling in CPS

Explore tools and methodologies for simulating and modeling CPS to optimize design and oper

20.9..Applications and Case Studies of CPS

Analyze various applications of CPS in industries like healthcare, automotive, and smart grids

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20.1 Masters in Cyber-Physical Systems and Information Technology

This course provides an in-depth understanding of Cyber-Physical Systems (CPS) within the re
students will gain insights into the integration, design, and application of CPS in various sector
to equip students with the skills necessary to innovate in this rapidly evolving field.

20.2 Introduction to Cyber-Physical Systems

This topic covers the basics of CPS, including definitions, history, and key concepts that distin

Key Topics:

- **Definitions:** Understanding what CPS are and how they operate.
- **History:** Tracing the development and evolution of CPS.
- **Key Concepts:** Exploring the unique attributes of CPS, such as real-time computi

20.3 Architecture of CPS

Explore the architecture of CPS, focusing on sensors, actuators, control systems, and the role

Key Topics:

- **Sensors and Actuators:** Understanding their roles and how they interact within
- **Control Systems:** Examining the mechanisms that manage and control physical
- **IoT Integration:** The role of IoT in enhancing CPS functionality and connectivity.

20.4 Networking and Communication in CPS

Understand the communication protocols and networks that enable interaction between cyber

Key Topics:

- **Communication Protocols:** Exploring various protocols used in CPS for data tra
- **Network Architecture:** Designing and managing networks to support CPS opera
- **Data Exchange:** Ensuring efficient and secure data exchange between compone

20.5 CPS Security and Privacy

This topic delves into the security challenges in CPS and discusses methods to ensure data int

Key Topics:

- **Security Challenges:** Identifying and addressing vulnerabilities in CPS.
- **Data Integrity:** Techniques for ensuring the accuracy and reliability of data.
- **Privacy Measures:** Protecting sensitive information within CPS environments.

20.6 Machine Learning in CPS

Examine the role of machine learning in optimizing the performance and decision-making proc

Key Topics:

- **Machine Learning Algorithms:** Applying algorithms to enhance CPS functionali
- **Optimization:** Using machine learning for predictive maintenance and performan
- **Decision-Making:** Enhancing automated decision-making processes in CPS.

20.7 Real-Time Systems and CPS

Learn about the real-time requirements of CPS and the design considerations necessary to me

Key Topics:

- **Real-Time Computing:** Understanding the principles of real-time systems.
- **Design Considerations:** Ensuring CPS can meet strict timing constraints.
- **Application Scenarios:** Real-world examples of real-time CPS applications.

20.8 Simulation and Modeling in CPS

Explore tools and methodologies for simulating and modeling CPS to optimize design and oper

Key Topics:

- **Simulation Tools:** Overview of tools used for CPS simulation.
- **Modeling Techniques:** Creating accurate models of CPS for analysis and optimiz
- **Design Optimization:** Using simulations to improve CPS design and performanc

20.9 Applications and Case Studies of CPS

Analyze various applications of CPS in industries like healthcare, automotive, and smart grids

Key Topics:

- **Industry Applications:** Exploring how CPS are applied in different sectors.
- **Case Studies:** Reviewing successful implementations and their outcomes.
- **Lessons Learned:** Understanding the challenges and solutions in real-world CPS

These courses provide a comprehensive understanding of Cyber-Physical Systems and their in
lead in this rapidly evolving field.

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21 topics

4.1 .12.15.21.1.Masters in Distributed-Ledger Technology Applications in Educational Technolo
This course explores the integration of distributed ledger technologies (DLT), such as blockcha
applications in the management and dissemination of educational content, secure credentialir
understanding and practical skills to innovate within the educational sector using advanced D

21.1.

An overview of distributed ledger technology including blockchain, its history, and basic princi

21.2.The Need for Distributed Ledger Technology in Education
Examine the challenges in the current educational systems and how DLT can address issues a

21.3.Blockchain for Secure Credentialing
Explore how blockchain can be used for secure credentialing, providing reliable storage and e

21.4.Smart Contracts in Educational Transactions
Learn about smart contracts and how they can optimize and automate payment systems, enro

21.5..DLT-based Learning Management Systems
Investigate the potential of DLT to revolutionize Learning Management Systems (LMS) by enal

Privacy and Data Security in DLT
Understand the privacy considerations and security protocols of DLT systems and how data pr

21.6.Case Studies of DLT in Education
Review real-world implementations of DLT in education and analyze the outcomes and lessons

21.7.Future Trends in DLT and EdTech

Delve into the emerging trends and future directions of DLT applications in educational techno

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21.1 Masters in Distributed-Ledger Technology Applications in Educational Technology

This course explores the integration of distributed ledger technologies (DLT), such as blockcha applications in the management and dissemination of educational content, secure credentialir understanding and practical skills to innovate within the educational sector using advanced DI

21.2 Introduction to Distributed Ledger Technology

An overview of distributed ledger technology including blockchain, its history, and basic princi

Key Topics:

- **History of DLT:** Understanding the origins and evolution of distributed ledger tec
- **Basic Principles:** Exploring the core principles of decentralization, transparency,
- **Blockchain Technology:** Introduction to blockchain and how it functions as a dis

21.3 The Need for Distributed Ledger Technology in Education

Examine the challenges in the current educational systems and how DLT can address issues a

Key Topics:

- **Current Challenges:** Identifying problems such as data breaches, fraud, and ine
- **DLT Solutions:** How distributed ledger technology can enhance data security, en
- **Case Examples:** Real-world scenarios where DLT has been implemented in educa

21.4 Blockchain for Secure Credentialing

Explore how blockchain can be used for secure credentialing, providing reliable storage and e

Key Topics:

- **Credentialing Issues:** Understanding the issues with traditional credentialing m
- **Blockchain Solutions:** How blockchain ensures secure and tamper-proof creden
- **Verification:** The process of verifying educational credentials using blockchain.

21.5 Smart Contracts in Educational Transactions

Learn about smart contracts and how they can optimize and automate payment systems, enr

Key Topics:

- **Smart Contracts:** Understanding what smart contracts are and how they work.
- **Applications in Education:** Using smart contracts for automating payments, en
- **Benefits and Challenges:** Exploring the advantages and potential challenges of

21.6 DLT-based Learning Management Systems

Investigate the potential of DLT to revolutionize Learning Management Systems (LMS) by enal

Key Topics:

- **DLT Integration:** How distributed ledger technology can be integrated into LMS.
- **Decentralized Data Management:** Benefits of decentralized data management
- **Analytics:** Leveraging DLT for enhanced data analytics and insights.

21.7 Privacy and Data Security in DLT

Understand the privacy considerations and security protocols of DLT systems and how data pr

Key Topics:

- **Privacy Protocols:** Implementing privacy protocols in DLT systems.
- **Data Security:** Ensuring the security of data stored and managed on distributed
- **Educational Contexts:** Specific considerations for enhancing data privacy in edu

21.8 Case Studies of DLT in Education

Review real-world implementations of DLT in education and analyze the outcomes and lessons

Key Topics:

- **Case Studies:** Detailed analysis of successful DLT implementations in educationa
- **Outcomes:** Understanding the impact of DLT on educational processes.
- **Lessons Learned:** Key takeaways and best practices from real-world examples.

21.9 Future Trends in DLT and EdTech

Delve into the emerging trends and future directions of DLT applications in educational techn

Key Topics:

- **Emerging Trends:** Identifying new and upcoming trends in DLT and EdTech.
- **Future Directions:** Exploring potential future developments in DLT applications f
- **Research and Innovation:** Current and future research initiatives in the field of

These courses provide a comprehensive understanding of distributed ledger technology applic
innovate and lead in this rapidly evolving field.

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22 topics

4.1 .12.15.22.1.Master's in Adult Education Services

This course is designed for educators and professionals aspiring to excel in the field of adult e
unique needs and challenges faced by adult learners. The course aims to prepare students to
settings.

22.1.Introduction to Adult Education

An overview of the principles and practices in adult education, including historical perspective

22.2.Theories of Adult Learning

Exploration of key theories such as Andragogy, Transformative Learning, and Experiential Lea

22.3.Curriculum Design for Adult Learners

Techniques and strategies for developing effective curricula tailored to adult learners' needs a

22.4.Assessment and Evaluation in Adult Education

Methods for assessing adult learners' progress and program effectiveness, including formative

22.5.Technology Integration in Adult Learning

Utilizing digital tools and technologies to enhance adult learning experiences.

22.6.Diversity and Inclusion in Adult Education

Addressing the diverse backgrounds, identities, and learning styles of adult learners.

22.7.Motivational Strategies for Adult Learners

Strategies to engage and motivate adult learners, fostering a positive and productive learning

22.8.Professional Development for Adult Educators

Resources and strategies for ongoing professional growth and development in adult educatior

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22.1 Master's in Adult Education Services

This course is designed for educators and professionals aspiring to excel in the field of adult e
unique needs and challenges faced by adult learners. The course aims to prepare students to
settings.

22.2 Introduction to Adult Education

An overview of the principles and practices in adult education, including historical perspective

Key Topics:

- **Principles of Adult Education:** Understanding the foundational principles guidi
- **Historical Perspectives:** Tracing the evolution of adult education practices.
- **Modern Developments:** Exploring recent advancements and trends in adult edu

22.3 Theories of Adult Learning

Exploration of key theories such as Andragogy, Transformative Learning, and Experiential Lea

Key Topics:

- **Andragogy:** Principles of adult learning introduced by Malcolm Knowles.
- **Transformative Learning:** How transformative experiences foster deep learning
- **Experiential Learning:** The role of hands-on experiences and reflection in adult

22.4 Curriculum Design for Adult Learners

Techniques and strategies for developing effective curricula tailored to adult learners' needs a

Key Topics:

- **Needs Assessment:** Identifying the learning needs of adult learners.
- **Curriculum Planning:** Creating structured and flexible curricula that accommoda
- **Instructional Strategies:** Implementing various teaching methods to enhance le

22.5 Assessment and Evaluation in Adult Education

Methods for assessing adult learners' progress and program effectiveness, including formative

Key Topics:

- **Formative Assessment:** Techniques for ongoing assessment to support learning

- **Summative Evaluation:** Evaluating learner outcomes at the end of a program.
- **Program Effectiveness:** Measuring the success and impact of adult education p

22.6 Technology Integration in Adult Learning

Utilizing digital tools and technologies to enhance adult learning experiences.

Key Topics:

- **E-Learning Platforms:** Using online platforms to deliver educational content.
- **Blended Learning:** Combining face-to-face and online learning methods.
- **Tech Tools:** Incorporating various digital tools to support teaching and learning.

22.7 Diversity and Inclusion in Adult Education

Addressing the diverse backgrounds, identities, and learning styles of adult learners.

Key Topics:

- **Cultural Competence:** Understanding and respecting cultural differences in the
- **Inclusive Practices:** Implementing strategies to create inclusive learning enviror
- **Learning Styles:** Adapting teaching methods to accommodate different learning

22.8 Motivational Strategies for Adult Learners

Strategies to engage and motivate adult learners, fostering a positive and productive learning

Key Topics:

- **Motivational Theories:** Exploring theories that explain adult learner motivation.
- **Engagement Techniques:** Practical strategies to keep adult learners engaged.
- **Supportive Environment:** Creating a learning environment that encourages per

22.9 Professional Development for Adult Educators

Resources and strategies for ongoing professional growth and development in adult educatior

Key Topics:

- **Continuing Education:** Opportunities for adult educators to enhance their skills
- **Professional Networks:** Building and leveraging networks for support and growt

- **Reflective Practice:** Encouraging self-reflection to improve teaching practices.

These courses provide a comprehensive understanding of adult education services, equipping programs tailored to adult learners.

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23 topics

4.1 .12.15.23.1Quantum Computing in Systems Engineering
This course provides an in-depth exploration of quantum computing principles and their applic understanding of both theoretical foundations and practical implementations of quantum tech

23.1.Introduction to Quantum Computing
An overview of the principles of quantum mechanics that form the basis of quantum computin

23.2.Quantum Algorithms
Detailed study of key quantum algorithms such as Shor's algorithm and Grover's algorithm, ar

22.3.Quantum Gates and Circuits
Exploration of fundamental quantum gates and the construction of quantum circuits to perfor

22.4.Quantum Information Theory
Understanding the theoretical underpinnings of how quantum mechanics enhances informatio

22.5.Quantum Computing Platforms
Introduction to current quantum computing platforms and hardware, including superconductin

22.6.Quantum Programming Languages
Learning and applying quantum programming languages such as Qiskit, Cirq, and Q# to deve

22.7.Applications of Quantum Computing in Systems Engineering
Investigation of potential applications of quantum computing in systems engineering, includin

22.8.Challenges and Future of Quantum Computing
Discussion on the current challenges facing the field of quantum computing and potential dire

22.9.Quantum Supremacy and its Implications
Examination of the concept of quantum supremacy and its potential to revolutionize computin

23.1 Quantum Computing in Systems Engineering

This course provides an in-depth exploration of quantum computing principles and their applic
understanding of both theoretical foundations and practical implementations of quantum tech

23.1 Introduction to Quantum Computing

An overview of the principles of quantum mechanics that form the basis of quantum computin

Key Topics:

- **Qubits:** Understanding the basic unit of quantum information.
- **Superposition:** How qubits can exist in multiple states simultaneously.
- **Entanglement:** The phenomenon where qubits become interconnected and the s

23.2 Quantum Algorithms

Detailed study of key quantum algorithms such as Shor's algorithm and Grover's algorithm, ar

Key Topics:

- **Shor's Algorithm:** How it factors large numbers exponentially faster than classic
- **Grover's Algorithm:** Quantum search algorithm providing quadratic speedup.
- **Implications:** Potential applications in cryptography, optimization, and more.

23.3 Quantum Gates and Circuits

Exploration of fundamental quantum gates and the construction of quantum circuits to perfor

Key Topics:

- **Quantum Gates:** Basic gates such as Pauli-X, Hadamard, and CNOT.
- **Quantum Circuits:** Building and understanding circuits composed of quantum ga
- **Quantum Operations:** Executing operations and measuring results.

23.4 Quantum Information Theory

Understanding the theoretical underpinnings of how quantum mechanics enhances informatio

Key Topics:

- **Quantum Entropy:** Measures of information and uncertainty in quantum system
- **Quantum Error Correction:** Techniques to protect quantum information from er

- **Quantum Channels:** Understanding communication channels in quantum inform

23.5 Quantum Computing Platforms

Introduction to current quantum computing platforms and hardware, including superconductin

Key Topics:

- **Superconducting Qubits:** How they work and their role in quantum computers.
- **Trapped Ions:** Another leading technology for building quantum computers.
- **Quantum Hardware:** Overview of different types of quantum computing hardwa

23.6 Quantum Programming Languages

Learning and applying quantum programming languages such as Qiskit, Cirq, and Q# to deve

Key Topics:

- **Qiskit:** IBM's open-source quantum computing framework.
- **Cirq:** Google's framework for developing quantum algorithms.
- **Q#:** Microsoft's quantum programming language.
- **Algorithm Development:** Writing and testing quantum algorithms.

23.7 Applications of Quantum Computing in Systems Engineering

Investigation of potential applications of quantum computing in systems engineering, includin

Key Topics:

- **Optimization:** Using quantum computing to solve complex optimization problem
- **Simulation:** Quantum simulations of physical systems.
- **Cryptography:** How quantum computing can enhance or break cryptographic sy

23.8 Challenges and Future of Quantum Computing

Discussion on the current challenges facing the field of quantum computing and potential dire

Key Topics:

- **Scalability:** Challenges in scaling up quantum computers.
- **Decoherence:** Addressing the issue of qubit stability over time.

- **Future Research:** Directions for advancements in quantum computing technolog

23.9 Quantum Supremacy and its Implications

Examination of the concept of quantum supremacy and its potential to revolutionize computin

Key Topics:

- **Quantum Supremacy:** Understanding what it means for a quantum computer to
- **Implications:** The potential impact on various industries and fields.
- **Milestones:** Significant achievements in reaching quantum supremacy.

These courses provide a comprehensive understanding of quantum computing in systems eng in this rapidly evolving field.

23.1 topics:

4.1 .12.15..23.2.Neurotechnology in Educational Technology

This course explores the intersection of neurotechnology and educational technology, focusing experiences and outcomes. Students will delve into theoretical aspects, practical applications,

23.3.Introduction to Neurotechnology

This topic provides a foundational understanding of neurotechnology, including its history, dev technologies used in neurotechnology.

23.4.Neuroscience Basics for Educators

An overview of essential neuroscience principles necessary for understanding how neurotechn function in learning.

23.5.Brain-Computer Interfaces in Education

Examine how Brain-Computer Interfaces (BCIs) can be used to facilitate learning, including cu

23.6.Cognitive Load Theory and Neurotechnology

Understand how cognitive load theory informs the design of neurotechnology applications in l

23.7.Neuroscience-Based Adaptive Learning Technologies

Explore how adaptive learning technologies informed by neuroscience can personalize and en

23.8.Ethical and Social Implications

Consider the ethical and social implications of using neurotechnology in educational settings,

23.9.Case Studies in Neurotechnology Education

Review real-world case studies where neurotechnology has been applied within educational co

23.10.Future Trends in Neurotechnology for Education

Discuss and predict future trends in the deployment of neurotechnology for educational purpo

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23.2 Neurotechnology in Educational Technology

This course explores the intersection of neurotechnology and educational technology, focusing experiences and outcomes. Students will delve into theoretical aspects, practical applications,

23.3 Introduction to Neurotechnology

This topic provides a foundational understanding of neurotechnology, including its history, dev technologies used in neurotechnology.

Key Topics:

- **History and Development:** Tracing the evolution of neurotechnology from its in
- **Devices and Technologies:** Overview of brain-computer interfaces (BCIs), neuro
- **Current State:** Understanding the latest innovations and applications in neurotec

23.4 Neuroscience Basics for Educators

An overview of essential neuroscience principles necessary for understanding how neurotechn function in learning.

Key Topics:

- **Brain Structure:** Understanding the anatomy of the brain and its relevance to le
- **Brain Function:** Exploring how different brain regions contribute to cognitive pro
- **Neuroplasticity:** The brain's ability to adapt and reorganize, crucial for learning a

23.5 Brain-Computer Interfaces in Education

Examine how Brain-Computer Interfaces (BCIs) can be used to facilitate learning, including cu

Key Topics:

- **BCI Technology:** Understanding how BCIs work and their potential in education.
- **Current Applications:** Examples of BCIs being used to aid learning and accessib
- **Future Possibilities:** Exploring innovative ways BCIs could transform education.

23.6 Cognitive Load Theory and Neurotechnology

Understand how cognitive load theory informs the design of neurotechnology applications in l

Key Topics:

- **Cognitive Load Theory:** Basics of cognitive load and its impact on learning.
- **Application Design:** Designing neurotechnology tools that optimize cognitive loa
- **Practical Examples:** Implementing cognitive load principles in educational techn

23.7 Neuroscience-Based Adaptive Learning Technologies

Explore how adaptive learning technologies informed by neuroscience can personalize and en

Key Topics:

- **Adaptive Learning:** Principles and benefits of adaptive learning systems.
- **Neuroscience Insights:** How neuroscience informs the design of adaptive learni
- **Personalization:** Creating personalized learning experiences based on cognitive

23.8 Ethical and Social Implications

Consider the ethical and social implications of using neurotechnology in educational settings,

Key Topics:

- **Ethical Considerations:** Addressing issues such as data privacy, informed conse
- **Social Implications:** Understanding the broader impact of neurotechnology on s
- **Regulatory Frameworks:** Overview of regulations governing the use of neurote

23.9 Case Studies in Neurotechnology Education

Review real-world case studies where neurotechnology has been applied within educational c

Key Topics:

- **Case Studies:** Detailed examination of successful neurotechnology implementati
- **Outcomes Assessment:** Evaluating the effectiveness and impact of neurotechn
- **Lessons Learned:** Key takeaways and best practices from real-world examples.

23.10 Future Trends in Neurotechnology for Education

Discuss and predict future trends in the deployment of neurotechnology for educational purpo

Key Topics:

- **Emerging Trends:** Identifying new and upcoming trends in neurotechnology and
- **Future Directions:** Exploring potential future developments and innovations.
- **Research and Innovation:** Current and future research initiatives in the field of

These courses provide a comprehensive understanding of neurotechnology applications in edu
in this rapidly evolving field.

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24. topics

4.1 .12.15.24.1.Robotic Process Automation in Electrochemical Engineering

This course explores the integration of Robotic Process Automation (RPA) within the field of El
automation technologies can enhance efficiency, accuracy, and productivity in electrochemica
skills in designing, implementing, and managing automated processes in electrochemical sett

24.2Introduction to Robotic Process Automation

This module introduces the fundamentals of RPA, covering its history, benefits, and applicatio

24.3.Fundamentals of Electrochemical Engineering

Explore the core principles of electrochemical engineering, including electrochemistry, materi

24.4.RPA Tools and Platforms

Gain insights into popular RPA tools and platforms like UiPath, Automation Anywhere, and Blu

24.5.Automating Electrochemical Process Controls

Study the application of RPA in automating the control systems within electrochemical proces

24.6.Data Collection and Analysis in Electrochemical Systems

Learn how RPA can facilitate data collection, analysis, and reporting in electrochemical systen

24.7.Machine Learning and RPA in Electrochemical Engineering

Explore the intersection of machine learning and RPA in electrochemical engineering for predi

24.8.RPA Implementation Challenges and Solutions

Discuss the challenges faced during the implementation of RPA in electrochemical engineering

24.9.Case Studies and Industry Applications

Analyze various case studies to understand how RPA has been applied successfully in the field

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4.1 Robotic Process Automation in Electrochemical Engineering

This course explores the integration of Robotic Process Automation (RPA) within the field of El automation technologies can enhance efficiency, accuracy, and productivity in electrochemica skills in designing, implementing, and managing automated processes in electrochemical sett

24.2 Introduction to Robotic Process Automation

This module introduces the fundamentals of RPA, covering its history, benefits, and applicatio

Key Topics:

- **History of RPA:** Understanding the origins and evolution of robotic process auto
- **Benefits:** Exploring the advantages of RPA, such as increased efficiency, reduced
- **Applications:** Examining how RPA is used in various industries, including finance

24.3 Fundamentals of Electrochemical Engineering

Explore the core principles of electrochemical engineering, including electrochemistry, materi

Key Topics:

- **Electrochemistry Basics:** Understanding the chemical processes involved in ele
- **Materials Science:** Studying the properties and behaviors of materials used in e
- **Process Design:** Designing efficient and effective electrochemical processes.

24.4 RPA Tools and Platforms

Gain insights into popular RPA tools and platforms like UiPath, Automation Anywhere, and Blu

Key Topics:

- **UiPath:** Overview of UiPath's features and applications.
- **Automation Anywhere:** Exploring Automation Anywhere's capabilities and use c
- **Blue Prism:** Understanding Blue Prism's tools and how they are used in RPA.

24.5 Automating Electrochemical Process Controls

Study the application of RPA in automating the control systems within electrochemical proces

Key Topics:

- **Control Systems Automation:** Techniques for automating control systems in el
- **Precision and Efficiency:** Enhancing precision and efficiency through automatio
- **Real-World Applications:** Examples of automated control systems in electroche

24.6 Data Collection and Analysis in Electrochemical Systems

Learn how RPA can facilitate data collection, analysis, and reporting in electrochemical system

Key Topics:

- **Data Collection:** Techniques for automating data collection in electrochemical sy
- **Data Analysis:** Using RPA to analyze data and generate insights.
- **Reporting:** Automating the generation of reports to support decision-making.

24.7 Machine Learning and RPA in Electrochemical Engineering

Explore the intersection of machine learning and RPA in electrochemical engineering for predi

Key Topics:

- **Predictive Maintenance:** Using machine learning and RPA for predictive mainte
- **Process Optimization:** Enhancing process efficiency and effectiveness through r
- **Case Studies:** Real-world examples of machine learning and RPA in electrochemi

24.8 RPA Implementation Challenges and Solutions

Discuss the challenges faced during the implementation of RPA in electrochemical engineering

Key Topics:

- **Implementation Challenges:** Identifying common challenges in RPA implement
- **Solutions:** Exploring strategies to overcome implementation challenges.
- **Best Practices:** Establishing best practices for successful RPA implementation.

24.9 Case Studies and Industry Applications

Analyze various case studies to understand how RPA has been applied successfully in the field

Key Topics:

- **Case Studies:** Detailed analysis of successful RPA implementations in electroche
- **Industry Applications:** Exploring how different sectors use RPA in electrochemic
- **Lessons Learned:** Understanding the key takeaways from real-world application

These courses provide a comprehensive understanding of robotic process automation in elect efficiency, accuracy, and productivity in this field

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25.1topics

4.1 .12.15.25.1.Integrating Educational Technology in Renewable Energy Studies

This course is designed for master's students interested in combining the fields of renewable e informing about renewable energy, examining innovative teaching tools and strategies. Stude at increasing awareness, understanding, and adoption of renewable energy concepts.

25.2.Introduction to Renewable Energy

An overview of various renewable energy sources, including solar, wind, hydroelectric, and ge along with their current global usage.

25.3.Educational Technology Tools

Examines the digital tools and platforms available for creating engaging learning

25.4.Designing Interactive Learning Modules

This topic covers the methodologies and best practices for designing interactive and immersiv

25.5.Gamification in Renewable Energy Education

Explores the concept of gamification and how game-like elements can enhance learning in ren

25.6.Virtual Labs and Simulations

Discusses the role of virtual labs and simulations in teaching complex renewable energy conc

25.7.Assessing Learner Outcomes in Technology-Driven Curriculum

This topic focuses on developing assessment strategies for technology-enhanced renewable e

25.8.Case Studies in Renewable Energy Education

Analyzes real-world examples of successful renewable energy educational programs and the r

25.9.Challenges in Integrating Technology and Renewable Energy Education

Addresses common challenges faced when integrating technology into renewable energy edu

25.1 Integrating Educational Technology in Renewable Energy Studies

This course is designed for master's students interested in combining the fields of renewable e
informing about renewable energy, examining innovative teaching tools and strategies. Stude
at increasing awareness, understanding, and adoption of renewable energy concepts.

25.2 Introduction to Renewable Energy

An overview of various renewable energy sources, including solar, wind, hydroelectric, and ge
along with their current global usage.

Key Topics:

- **Solar Energy:** Principles, benefits, challenges, and global usage.
- **Wind Energy:** How wind power works, its advantages, and current implementatio
- **Hydroelectric Energy:** Understanding the mechanics and impact of hydroelectri
- **Geothermal Energy:** Exploring how geothermal energy is harnessed and its ben

25.3 Educational Technology Tools

Examines the digital tools and platforms available for creating engaging learning experiences.

Key Topics:

- **Digital Learning Platforms:** Overview of tools like Moodle, Canvas, and Google
- **Interactive Tools:** Utilizing tools like Kahoot, Quizlet, and interactive whiteboard
- **Content Creation:** Software for creating educational content, such as Adobe Cap

25.4 Designing Interactive Learning Modules

This topic covers the methodologies and best practices for designing interactive and immersiv

Key Topics:

- **Module Design:** Principles of designing effective interactive learning modules.
- **Immersive Learning:** Techniques to create immersive learning experiences.
- **Best Practices:** Strategies to enhance engagement and retention through intera

25.5 Gamification in Renewable Energy Education

Explores the concept of gamification and how game-like elements can enhance learning in ren

Key Topics:

- **Gamification Principles:** Understanding the basics of gamification and its educa
- **Application in Education:** Implementing game elements like points, badges, an
- **Impact on Learning:** How gamification improves motivation and engagement.

25.6 Virtual Labs and Simulations

Discusses the role of virtual labs and simulations in teaching complex renewable energy conc

Key Topics:

- **Virtual Labs:** Benefits and examples of virtual labs in renewable energy educatio
- **Simulations:** Using simulations to teach and experiment with renewable energy
- **Implementation:** Best practices for integrating virtual labs and simulations into t

25.7 Assessing Learner Outcomes in Technology-Driven Curriculum

This topic focuses on developing assessment strategies for technology-enhanced renewable e

Key Topics:

- **Assessment Methods:** Different methods for assessing learner outcomes in tech
- **Formative and Summative Assessment:** Utilizing both to measure progress ar
- **Data Analysis:** Using data from assessments to improve teaching strategies and

25.8 Case Studies in Renewable Energy Education

Analyzes real-world examples of successful renewable energy educational programs and the r

Key Topics:

- **Case Studies:** Detailed analysis of successful implementations of educational tec
- **Technology's Role:** Understanding how technology facilitated learning and enga
- **Lessons Learned:** Key takeaways and best practices from real-world examples.

25.9 Challenges in Integrating Technology and Renewable Energy Education

Addresses common challenges faced when integrating technology into renewable energy edu

Key Topics:

- **Common Challenges:** Identifying barriers such as funding, access to technology
- **Solutions:** Strategies to overcome these challenges.
- **Future Directions:** Exploring future trends and innovations in the field.

These courses provide a comprehensive understanding of how educational technology can be to innovate and lead in this interdisciplinary fi

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4.1 .12.15.26.1Wholesale Trade Management in Industrial Engineering

This course is designed for students pursuing a Master's degree in Industrial Engineering with management, including supply chain dynamics, inventory control, logistics, procurement, and strategies to enable students to effectively manage and innovate within the wholesale trade s

26.2.Introduction to Wholesale Trade

Explore the fundamentals of wholesale trade, its role in the supply chain, and the economic im

26.3.Supply Chain Dynamics

Understand the complexities of supply chain management, including network design, integrat

26.4.Inventory Control Methods

Study various inventory management techniques, such as Just-In-Time, Economic Order Quant

26.5.Logistics and Distribution

Examine the logistics involved in wholesale trade, focusing on distribution networks, transport

26.6.Procurement Strategies

Learn about procurement processes and strategies, vendor selection, and relationship manag

26.7.Market Analysis and Forecasting

Study techniques for market analysis, trend observation, and forecasting methods to drive str

27.8.Risk Management in Wholesale Trade

Analyze risk management principles, identifying potential risks in the wholesale supply chain a

27.9.Regulatory and Ethical Considerations

Explore the regulatory landscape affecting wholesale trade and the ethical considerations of o

26.1 Wholesale Trade Management in Industrial Engineering

This course is designed for students pursuing a Master's degree in Industrial Engineering with management, including supply chain dynamics, inventory control, logistics, procurement, and strategies to enable students to effectively manage and innovate within the wholesale trade s

26.2 Introduction to Wholesale Trade

Explore the fundamentals of wholesale trade, its role in the supply chain, and the economic im

Key Topics:

- **Fundamentals:** Understanding the basics of wholesale trade.
- **Role in Supply Chain:** How wholesale trade fits within the broader supply chain.
- **Economic Impact:** Examining the economic significance of wholesale trade on in

26.3 Supply Chain Dynamics

Understand the complexities of supply chain management, including network design, integrat

Key Topics:

- **Network Design:** Principles of designing efficient supply chain networks.
- **Integration:** Integrating various components of the supply chain for seamless op
- **Technology:** Utilizing technology to enhance supply chain efficiency.

26.4 Inventory Control Methods

Study various inventory management techniques, such as Just-In-Time, Economic Order Quant

Key Topics:

- **Just-In-Time (JIT):** Minimizing inventory holding costs by receiving goods only as
- **Economic Order Quantity (EOQ):** Calculating the optimal order quantity to min
- **ABC Analysis:** Categorizing inventory to prioritize management efforts.

26.5 Logistics and Distribution

Examine the logistics involved in wholesale trade, focusing on distribution networks, transport

Key Topics:

- **Distribution Networks:** Designing and managing distribution networks.
- **Transportation Management:** Efficiently managing transportation logistics.
- **Warehousing Solutions:** Implementing effective warehousing strategies.

26.6 Procurement Strategies

Learn about procurement processes and strategies, vendor selection, and relationship manag

Key Topics:

- **Procurement Processes:** Understanding procurement procedures and best prac
- **Vendor Selection:** Criteria for selecting and evaluating vendors.
- **Relationship Management:** Building and maintaining strong supplier relationsh

26.7 Market Analysis and Forecasting

Study techniques for market analysis, trend observation, and forecasting methods to drive str

Key Topics:

- **Market Analysis:** Techniques for analyzing market conditions and trends.
- **Trend Observation:** Identifying and interpreting market trends.
- **Forecasting Methods:** Using quantitative and qualitative methods to predict fut

26.8 Risk Management in Wholesale Trade

Analyze risk management principles, identifying potential risks in the wholesale supply chain a

Key Topics:

- **Risk Identification:** Identifying potential risks in the supply chain.
- **Mitigation Strategies:** Developing strategies to mitigate identified risks.
- **Risk Management Frameworks:** Implementing risk management frameworks t

26.9 Regulatory and Ethical Considerations

Understand the regulatory and ethical considerations in wholesale trade, including compliance

Key Topics:

- **Regulatory Compliance:** Ensuring adherence to relevant laws and regulations.
- **Ethical Business Practices:** Promoting ethical behavior and corporate social res
- **Case Studies:** Analyzing real-world examples of regulatory and ethical challenge

These courses provide a comprehensive understanding of wholesale trade management in ind

and innovate within the wholesale trade sector.

28.topics

4.1 .12.15..29. 1.Advanced Wireless Communications

This course explores the fundamental principles and advanced techniques of wireless commu designs, and the latest advancements in wireless technologies to prepare students for careers

29.2.Introduction to Wireless Communications

Overview of wireless communication systems, historical developments, and contemporary ap

29.3.Radio Frequency Fundamentals

Exploration of radio frequency (RF) spectrum, key RF principles, and their application in wirele

29.4.Wireless Signal Propagation

Understanding the behavior of wireless signals over various media and environments, includin

29.5.Multiple Access Techniques

Survey of multiple access schemes including FDMA, TDMA, CDMA, and OFDMA, which enable

29.6.Wireless Networking and Protocols

Introduction to wireless network design, including protocol layers, network architectures, and

29.7.Cellular Systems and 5G

In-depth analysis of cellular network architecture, with a focus on the evolution from 1G to 5G

29.8..Antenna Theory and Design

Study of antenna characteristics, types, and their utilization in wireless communication systen

29.8Wireless Security

Exploration of security challenges and solutions in wireless communications, including encryp

29.6IoT and Wireless Sensor Networks

Examination of Internet of Things (IoT) concepts, architectures, and the role of wireless senso

29.1 Advanced Wireless Communications

This course explores the fundamental principles and advanced techniques of wireless commu designs, and the latest advancements in wireless technologies to prepare students for careers

29.2 Introduction to Wireless Communications

Overview of wireless communication systems, historical developments, and contemporary app

Key Topics:

- **Wireless Communication Systems:** Basic principles and components of wireles
- **Historical Developments:** Key milestones in the evolution of wireless communic
- **Contemporary Applications:** Current uses of wireless technology in various fiel

29.3 Radio Frequency Fundamentals

Exploration of radio frequency (RF) spectrum, key RF principles, and their application in wirele

Key Topics:

- **RF Spectrum:** Understanding the RF spectrum and its allocation.
- **RF Principles:** Basics of RF communication, including modulation and demodulat
- **Applications:** Practical uses of RF technology in wireless communication.

29.4 Wireless Signal Propagation

Understanding the behavior of wireless signals over various media and environments, includin

Key Topics:

- **Signal Propagation:** How wireless signals travel through different media.
- **Path Loss:** Factors affecting the attenuation of signal strength.
- **Fading and Interference:** Understanding and mitigating fading and interference

29.5 Multiple Access Techniques

Survey of multiple access schemes including FDMA, TDMA, CDMA, and OFDMA, which enable m

Key Topics:

- **FDMA (Frequency Division Multiple Access):** Assigning different frequency ba
- **TDMA (Time Division Multiple Access):** Allocating time slots to multiple users
- **CDMA (Code Division Multiple Access):** Using unique codes to differentiate us
- **OFDMA (Orthogonal Frequency Division Multiple Access):** Combining multip

29.6 Wireless Networking and Protocols

Introduction to wireless network design, including protocol layers, network architectures, and

Key Topics:

- **Protocol Layers:** Understanding the different layers in wireless communication p
- **Network Architectures:** Designing and implementing wireless network architect
- **Routing Protocols:** Overview of routing protocols used in wireless networks.

29.7 Cellular Systems and 5G

In-depth analysis of cellular network architecture, with a focus on the evolution from 1G to 5G

Key Topics:

- **Cellular Network Architecture:** Structure and components of cellular networks.
- **1G to 5G Evolution:** Historical progression and key features of each generation.
- **Future Trends:** Emerging technologies and advancements in cellular communica

29.8 Antenna Theory and Design

Study of antenna characteristics, types, and their utilization in wireless communication systen

Key Topics:

- **Antenna Characteristics:** Key parameters and performance metrics of antennas
- **Types of Antennas:** Different types of antennas used in wireless communication
- **Design and Utilization:** Designing and deploying antennas for optimal performa

29.9 Wireless Security

Exploration of security challenges and solutions in wireless communications, including encrypt

Key Topics:

- **Security Challenges:** Identifying common security threats in wireless communic
- **Encryption:** Techniques for securing wireless communication through encryption
- **Authentication:** Methods for verifying the identity of users and devices.

29.10 IoT and Wireless Sensor Networks

Examination of Internet of Things (IoT) concepts, architectures, and the role of wireless senso

Key Topics:

- **IoT Concepts:** Understanding the basic principles and applications of IoT.
- **Architectures:** Designing IoT systems and integrating wireless sensor networks.
- **Wireless Sensor Networks:** Deploying and managing sensor networks for IoT a

These courses provide a comprehensive understanding of advanced wireless communications telecommunications industry.

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30 topics

4.1 .12.15.30.1.Advanced Electrical Engineering in Construction and Civil Engineering

This course provides an in-depth understanding of electrical engineering principles and their a electrical systems within construction projects, the challenges of implementing sustainable en analysis, design, and problem-solving skills necessary for modern construction projects.

30.2. Fundamentals of Electrical Systems in Construction

Overview of electrical systems essential in construction projects, including power distribution,

30.3.Electrical Safety Standards and Codes

Detailed study of electrical safety standards, codes, and regulations specific to construction si

30.4.Integration of Electrical Systems in Building Design

Techniques for integrating electrical systems with architectural and structural frameworks in b

30.5Sustainable and Renewable Energy Technologies

Exploration of sustainable and renewable energy technologies applicable to construction proje

30.6.Smart Grids and Intelligent Networks

Study of smart grid technologies and their application in modern urban infrastructure.

30.7.Electrical System Design and Simulation

Practical approaches to the design and simulation of electrical systems for construction projec

30.8.Power Quality and Energy Management

Analysis of power quality issues and energy management strategies for improved efficiency.

30.9.Electrical Systems in Infrastructure Projects

Examination of the role of electrical engineering in large-scale infrastructure projects, such as

Advanced Electrical Engineering in Construction and Civil Engineering

This course provides an in-depth understanding of electrical engineering principles and their a
electrical systems within construction projects, the challenges of implementing sustainable en
analysis, design, and problem-solving skills necessary for modern construction projects.

30.2 Fundamentals of Electrical Systems in Construction

Overview of electrical systems essential in construction projects, including power distribution,

Key Topics:

- **Power Distribution:** Understanding the design and implementation of power dis
- **Lighting Systems:** Techniques for efficient lighting design in construction projec
- **Wiring Systems:** Best practices for wiring systems, including safety and complia

30.3 Electrical Safety Standards and Codes

Detailed study of electrical safety standards, codes, and regulations specific to construction si

Key Topics:

- **Safety Standards:** Overview of key electrical safety standards.
- **Codes and Regulations:** Understanding and complying with electrical codes and
- **Site Safety:** Implementing safety practices on construction sites to prevent elect

30.4 Integration of Electrical Systems in Building Design

Techniques for integrating electrical systems with architectural and structural frameworks in b

Key Topics:

- **System Integration:** Strategies for seamlessly integrating electrical systems wit
- **Coordination with Other Trades:** Ensuring coordination between electrical syst
- **Design Optimization:** Techniques for optimizing electrical designs for efficiency

30.5 Sustainable and Renewable Energy Technologies

Exploration of sustainable and renewable energy technologies applicable to construction proje

Key Topics:

- **Solar Energy:** Implementation of solar panels and photovoltaic systems in constr
- **Wind Energy:** Integrating wind turbines and other wind energy systems.

- **Energy Storage:** Utilizing energy storage solutions such as batteries and therma

30.6 Smart Grids and Intelligent Networks

Study of smart grid technologies and their application in modern urban infrastructure.

Key Topics:

- **Smart Grid Technologies:** Understanding the components and benefits of smar
- **Intelligent Networks:** Designing and managing intelligent networks for energy d
- **Urban Infrastructure:** Applying smart grid technologies to modern urban infrast

30.7 Electrical System Design and Simulation

Practical approaches to the design and simulation of electrical systems for construction projec

Key Topics:

- **Design Software:** Tools and software for electrical system design and simulation
- **Simulation Techniques:** Methods for simulating electrical systems to predict pe
- **Project Examples:** Case studies of electrical system design and simulation in rea

30.8 Power Quality and Energy Management

Analysis of power quality issues and energy management strategies for improved efficiency.

Key Topics:

- **Power Quality:** Identifying and addressing power quality issues such as voltage s
- **Energy Management:** Strategies for efficient energy management in constructio
- **Efficiency Improvement:** Techniques for improving the overall efficiency of elec

30.9 Electrical Systems in Infrastructure Projects

Examination of the role of electrical engineering in large-scale infrastructure projects, such as

Key Topics:

- **Transportation Systems:** Electrical engineering applications in transportation in
- **Water Systems:** Designing and managing electrical systems in water treatment
- **Infrastructure Projects:** Examples of large-scale infrastructure projects and the

These courses provide a comprehensive understanding of advanced electrical engineering pri
the knowledge and skills to effectivel

4.1 .12.15.Electrical Systems in Construction and Civil Engineering

This master's level course is designed to bridge the fields of construction and civil engineering
construction projects effectively, ensuring safety, efficiency, and innovation in modern infrastr

Introduction to Electrical Systems in Construction

Overview of electrical systems integration in construction projects, considering design, installa

Power Distribution in Buildings

Explore the principles and challenges of power distribution systems in modern buildings, inclu

Lighting Systems and Design

Study the design and implementation of efficient lighting systems in commercial and resident

Electrical Safety Standards and Regulations

Learn about international and local electrical safety standards and regulations pertinent to co

Sustainability in Electrical Engineering

Understand sustainable practices and technologies, such as solar power and energy efficiency

Smart Buildings and IoT Integration

Examine the incorporation of smart technologies and IoT in building systems for improved ene

Electrical Load Analysis and Estimation

Learn methods to analyze electrical loads and estimate demand for optimal system design.

Integration of Renewable Energy Sources

Explore the potential of integrating renewable energy sources into construction projects and u

Project Management in Electrical Engineering

Develop skills in managing electrical engineering projects within the construction industry, foc

30.1topics

4.1 .12.15.30.1.Doctorate in Specialist Engineering Infrastructure and Contractors: Electrical E

This advanced course is designed for students pursuing a Doctorate degree in Specialist Engi
to equip students with in-depth knowledge and practical skills necessary for the design, imple
contemporary challenges, innovative solutions, and emerging technologies in electrical engine

30.2.Advanced Power System Analysis

Exploration of power flow analysis, fault analysis, and stability assessment in large-scale elect

30.3Renewable Energy Systems

An in-depth examination of renewable energy technology integration, focusing on wind, solar,

30.4.Electrical Infrastructure Design and Management

Comprehensive overview of electrical infrastructure planning, design methodologies, and mar

31.5.Smart Grids and IoT Applications

Study of smart grid technology, IoT applications in electrical systems, and their impact on effi

31.6..High Voltage Engineering

Analysis of high voltage engineering principles, equipment, and testing methodologies in pow

31.7.Project Management in Electrical Engineering

Principles and practices of effective project management tailored to electrical engineering pro

31.8Energy Policy and Ethical Considerations

Examination of energy policies, regulatory frameworks, and ethical considerations impacting e

31.1Sustainable Electrical Engineering Practices

Strategies for incorporating sustainable practices in the planning, design, and execution of ele

30.1 Doctorate in Specialist Engineering Infrastructure and Contractors: Electrical Engineering

This advanced course is designed for students pursuing a Doctorate degree in Specialist Engi
to equip students with in-depth knowledge and practical skills necessary for the design, imple
contemporary challenges, innovative solutions, and emerging technologies in electrical engine

30.2 Advanced Power System Analysis

Exploration of power flow analysis, fault analysis, and stability assessment in large-scale elect

Key Topics:

- **Power Flow Analysis:** Techniques for analyzing the flow of electrical power in ne
- **Fault Analysis:** Identifying and mitigating faults in power systems.
- **Stability Assessment:** Evaluating and ensuring the stability of power systems.

30.3 Renewable Energy Systems

An in-depth examination of renewable energy technology integration, focusing on wind, solar,

Key Topics:

- **Wind Energy:** Understanding the technology and integration of wind power syste
- **Solar Energy:** Exploring photovoltaic systems and their applications.
- **Hydroelectric Power:** Implementing hydroelectric systems in renewable energy

30.4 Electrical Infrastructure Design and Management

Comprehensive overview of electrical infrastructure planning, design methodologies, and mar

Key Topics:

- **Infrastructure Planning:** Strategies for effective electrical infrastructure plannir
- **Design Methodologies:** Best practices in designing electrical infrastructure.
- **Management Practices:** Techniques for managing and maintaining electrical sy

31.5 Smart Grids and IoT Applications

Study of smart grid technology, IoT applications in electrical systems, and their impact on effi

Key Topics:

- **Smart Grid Technology:** Understanding the components and benefits of smart g
- **IoT in Electrical Systems:** Integrating IoT devices to enhance electrical system
- **Efficiency and Sustainability:** Improving efficiency and sustainability through s

31.6 High Voltage Engineering

Analysis of high voltage engineering principles, equipment, and testing methodologies in pow

Key Topics:

- **High Voltage Principles:** Core principles of high voltage engineering.
- **Equipment:** Understanding high voltage equipment and its applications.
- **Testing Methodologies:** Techniques for testing and ensuring the reliability of hi

31.7 Project Management in Electrical Engineering

Principles and practices of effective project management tailored to electrical engineering pro

Key Topics:

- **Project Planning:** Techniques for planning electrical engineering projects.

- **Resource Management:** Managing resources effectively in electrical projects.
- **Risk Management:** Identifying and mitigating risks in project management.

31.8 Energy Policy and Ethical Considerations

Examination of energy policies, regulatory frameworks, and ethical considerations impacting e

Key Topics:

- **Energy Policies:** Understanding policies that influence electrical engineering.
- **Regulatory Frameworks:** Complying with regulations in electrical infrastructure
- **Ethical Considerations:** Addressing ethical issues in electrical engineering.

31.9 Sustainable Electrical Engineering Practices

Strategies for incorporating sustainable practices in the planning, design, and execution of ele

Key Topics:

- **Sustainable Design:** Principles of designing sustainable electrical systems.
- **Energy Efficiency:** Implementing energy-efficient practices in electrical engineer
- **Environmental Impact:** Reducing the environmental impact of electrical project

These courses provide a comprehensive understanding of specialist engineering infrastructure knowledge and skills to effectively manage and innovate within the field

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Admission Ready - Completing your application - Atlantic International University

32.Topic

4.1 .12.15..32.1Clean Energy Technology: Ecotechnology Applications

This course provides an in-depth understanding of clean energy technologies with a focus on e innovations that contribute to reducing environmental impacts and fostering ecological balanc framework of ecological sustainability and environmental responsibility.

32.3.Introduction to Clean Energy and Ecotechnology

An overview of clean energy principles, the importance of ecotechnology, and how these field

32.4.Solar Energy Technologies

Exploration of solar energy systems, including photovoltaic and solar thermal technologies, ar

32.5.Wind Energy Systems

Study of wind energy generation, the mechanics of wind turbines, and the potential of wind po

32.6.Bioenergy and Biomass

Understanding the role of biomass in clean energy systems, including conversion technologies

32.7.Hydropower and Ocean Energy

Exploration of hydropower technologies and emerging ocean energy systems such as tidal an

32.8.Geothermal Energy

An examination of geothermal energy technologies, their environmental implications, and the

32.9.Energy Storage and Smart Grids

Understanding the role of energy storage technologies and smart grid systems in enhancing t

32.10.Policy and Economics of Clean Energy

Analysis of the policies and economic factors that influence clean energy adoption, with a focu

32.11Ecological Impact of Renewable Energy

Evaluating the ecological impacts of renewable energy projects and the methods to mitigate n

32.12.Future Directions in Clean Energy and Ecotechnology

Exploration of upcoming trends and innovations in clean energy and ecotechnology, including

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2.1 Clean Energy Technology: Ecotechnology Applications

This course provides an in-depth understanding of clean energy technologies with a focus on e
innovations that contribute to reducing environmental impacts and fostering ecological balanc
framework of ecological sustainability and environmental responsibility.

32.3 Introduction to Clean Energy and Ecotechnology

An overview of clean energy principles, the importance of ecotechnology, and how these fields

Key Topics:

- **Clean Energy Principles:** Understanding the basic concepts of clean energy.
- **Importance of Ecotechnology:** The role of ecotechnology in achieving sustaina
- **Integration:** How clean energy and ecotechnology work together to promote env

32.4 Solar Energy Technologies

Exploration of solar energy systems, including photovoltaic and solar thermal technologies, ar

Key Topics:

- **Photovoltaic Systems:** Basics and applications of photovoltaic solar panels.
- **Solar Thermal Technologies:** Understanding solar thermal energy and its uses.
- **Sustainable Solutions:** Implementing solar technologies in sustainable energy p

32.5 Wind Energy Systems

Study of wind energy generation, the mechanics of wind turbines, and the potential of wind po

Key Topics:

- **Wind Energy Generation:** Principles of generating energy from wind.
- **Wind Turbines:** Mechanics and design of wind turbines.
- **Potential and Applications:** Evaluating the potential of wind power as a renewa

32.6 Bioenergy and Biomass

Understanding the role of biomass in clean energy systems, including conversion technologies

Key Topics:

- **Biomass:** Types of biomass used in energy production.
- **Conversion Technologies:** Methods of converting biomass into usable energy.
- **Sustainable Sourcing:** Ensuring sustainable practices in sourcing biomass.

32.7 Hydropower and Ocean Energy

Exploration of hydropower technologies and emerging ocean energy systems such as tidal an

Key Topics:

- **Hydropower Technologies:** Basics of hydropower generation.
- **Ocean Energy Systems:** Understanding tidal and wave energy technologies.
- **Ecological Impact:** Assessing the ecological effects of hydropower and ocean en

32.8 Geothermal Energy

An examination of geothermal energy technologies, their environmental implications, and the

Key Topics:

- **Geothermal Technologies:** Basics of geothermal energy production.
- **Environmental Implications:** Understanding the impact of geothermal energy c
- **Global Strategies:** Role of geothermal energy in worldwide clean energy initiativ

32.9 Energy Storage and Smart Grids

Understanding the role of energy storage technologies and smart grid systems in enhancing t

Key Topics:

- **Energy Storage Technologies:** Exploring different types of energy storage solu
- **Smart Grids:** Basics of smart grid technology and its benefits.
- **Efficiency and Reliability:** Improving energy distribution through advanced stor

32.10 Policy and Economics of Clean Energy

Analysis of the policies and economic factors that influence clean energy adoption, with a focu

Key Topics:

- **Clean Energy Policies:** Understanding the policy landscape for clean energy.
- **Economic Factors:** Evaluating the economic benefits and challenges of clean en
- **Incentives:** Exploring incentives and support mechanisms for ecotechnology inno

32.11 Ecological Impact of Renewable Energy

Evaluating the ecological impacts of renewable energy projects and the methods to mitigate n

Key Topics:

- **Impact Assessment:** Techniques for assessing the ecological impact of renewab
- **Mitigation Strategies:** Methods to reduce the environmental impact of clean en
- **Best Practices:** Implementing best practices for ecological sustainability in renew

32.12 Future Directions in Clean Energy and Ecotechnology

Exploration of upcoming trends and innovations in clean energy and ecotechnology, including

Key Topics:

- **Emerging Trends:** Identifying new trends and innovations in clean energy and e

- **Research and Development:** Current and future research initiatives in the field

- **Future Prospects:** Predicting future directions and advancements in clean energ

These courses provide a comprehensive understanding of clean energy technology and ecote
innovate and lead in this field.

33.Topics

4.1 .12.15.33.1Integration of Electronic Engineering in Construction and Civil Engineering

This course aims to explore the integration of electronic engineering principles within the dom
systems for improved construction processes, smart infrastructure, and sustainable developm
optimize civil engineering projects using electronic solutions.

33.2.Introduction to Electronic Systems in Civil Engineering

This topic provides an overview of the role and importance of electronic systems in the constr

33.3.Smart Construction Technologies

Exploring various smart construction technologies enabled by electronic systems such as sens

33.4.IoT in Infrastructure Management

Understanding how IoT devices are used in managing and monitoring infrastructure and civil e

33.5.Electronic Monitoring and Control Systems

This topic covers the usage of electronic systems for monitoring and control within large-scale

33.6.Automation in Construction Machinery

Explore how electronic engineering drives the automation of construction machinery for enhan

33.7.Solar and Renewable Energy Systems in Civil Engineering

Investigate how electronic engineering aids in integrating solar and renewable energy system

33.8.Building Information Modeling (BIM) and Electronic Systems

Understand the role of electronic systems in enhancing Building Information Modeling process

33.9.Cybersecurity in Smart Infrastructure

Learn about the importance of cybersecurity systems to protect smart civil infrastructure from

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33.1 Integration of Electronic Engineering in Construction and Civil Engineering

This course aims to explore the integration of electronic engineering principles within the dom systems for improved construction processes, smart infrastructure, and sustainable developm optimize civil engineering projects using electronic solutions.

33.2 Introduction to Electronic Systems in Civil Engineering

This topic provides an overview of the role and importance of electronic systems in the constr

Key Topics:

- **Role and Importance:** Understanding how electronic systems are essential in m
- **Applications:** Examples of electronic systems used in these industries.
- **Technological Integration:** How electronic engineering is integrated into constr

33.3 Smart Construction Technologies

Exploring various smart construction technologies enabled by electronic systems such as sens

Key Topics:

- **Sensors:** Use of sensors for real-time monitoring and data collection.
- **IoT Devices:** Implementing IoT devices to create connected construction sites.
- **Automation:** Enhancing construction processes through automation technologies

33.4 IoT in Infrastructure Management

Understanding how IoT devices are used in managing and monitoring infrastructure and civil e

Key Topics:

- **IoT Devices:** Types and functions of IoT devices in infrastructure management.
- **Monitoring:** Techniques for using IoT to monitor infrastructure health and perfor
- **Management:** Strategies for managing infrastructure projects using IoT technolo

33.5 Electronic Monitoring and Control Systems

This topic covers the usage of electronic systems for monitoring and control within large-scale

Key Topics:

- **Monitoring Systems:** Implementing electronic systems to monitor construction
- **Control Systems:** Using electronic control systems to manage construction proc

- **Large-Scale Projects:** Examples of electronic monitoring and control in large co

33.6 Automation in Construction Machinery

Explore how electronic engineering drives the automation of construction machinery for enha

Key Topics:

- **Construction Machinery:** Types of machinery that can be automated.
- **Efficiency and Precision:** Benefits of automation in construction machinery.
- **Technology Integration:** How electronic engineering enables automation in con

33.7 Solar and Renewable Energy Systems in Civil Engineering

Investigate how electronic engineering aids in integrating solar and renewable energy system

Key Topics:

- **Solar Energy Systems:** Design and integration of solar energy solutions.
- **Renewable Energy:** Incorporating various renewable energy sources in civil eng
- **Sustainability:** Promoting sustainable development through renewable energy s

33.8 Building Information Modeling (BIM) and Electronic Systems

Understand the role of electronic systems in enhancing Building Information Modeling process

Key Topics:

- **BIM Technology:** Basics and benefits of Building Information Modeling.
- **Electronic Integration:** How electronic systems improve BIM processes.
- **Efficiency and Collaboration:** Enhancing project efficiency and collaboration th

33.9 Cybersecurity in Smart Infrastructure

Learn about the importance of cybersecurity systems in protecting smart infrastructure from c

Key Topics:

- **Cybersecurity Principles:** Understanding the basics of cybersecurity.
- **Smart Infrastructure:** Identifying vulnerabilities in smart infrastructure systems
- **Protection Strategies:** Implementing cybersecurity measures to protect smart i

These courses provide a comprehensive understanding of how electronic engineering can be i
skills to innovate and optimize projects using electronic solution

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34.1.Topic

4.1 .12.15..34.2.Masters in Immutable Data Storage Solutions for Web Design

This course provides an advanced understanding of immutable data storage solutions specific
different storage solutions, and apply best practices in the context of developing modern, resi

34.3.Introduction to Immutable Data

An overview of immutable data, its importance in web design, and basic concepts such as dat

33.4.Immutable Data Structures

Discussion on various immutable data structures such as lists, sets, and maps. Understanding

33.5.Immutable.js and Alternatives

An examination of popular libraries like Immutable.js and other alternatives that offer immuta

33.6.State Management with Immutable Data

Exploring how immutable data can simplify state management in web applications, with a focu

33.7.Performance Benefits of Immutable Data

Investigating the performance benefits that immutable data can bring to web applications and

33.8.GraphQL and Immutable Data

Integrating immutable data with GraphQL endpoints and understanding the implications for w

33.9.Immutable Data in Server-Side Rendering (SSR)

Utilizing immutable data in server-side rendering processes to boost performance and mainta

33.10.Security and Immutable Data

Understanding security concerns and best practices when implementing immutable data stora

33.11.Future Trends in Immutable Data

Exploring future trends and developments in immutable data storage solutions and how they

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Masters in Immutable Data Storage Solutions for Web Design

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34.2 Introduction to Immutable Data

An overview of immutable data, its importance in web design, and basic concepts such as dat

Key Topics:

- **Basics of Immutable Data:** Understanding what immutable data is and why it's
- **Data Structures:** Exploring the types of data structures used in immutable data.
- **Benefits:** Identifying the potential benefits of using immutable data in web desig

34.3 Immutable Data Structures

Discussion on various immutable data structures such as lists, sets, and maps. Understanding

Key Topics:

- **Lists:** Using immutable lists and their advantages.
- **Sets:** Implementing immutable sets for unique data storage.
- **Maps:** Exploring the use of immutable maps and their benefits.

34.Topic

4.1 .12.15.34.1.Masters in Immutable Data Storage Solutions for Web Design

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- **Sets:** Implementing immutable sets for unique data storage.
- **Maps:** Exploring the use of immutable maps and their benefits.

35.1.Topic

4.1 .12.15..35.2.Advanced Cyber-Physical Systems in Telecommunications

This course explores the intersection of cyber-physical systems and telecommunications, prov
solutions. The course covers the architecture, design, and implementation of next-generation
world applications and research developments.

35.3.Introduction to Cyber-Physical Systems

Understand the core concepts and significance of cyber-physical systems (CPS) in the modern

35.4.Network Architecture in CPS

Study the architectural principles of integrating CPS with telecommunication networks, includi

35.5..IoT and Cyber-Physical Systems

Explore the role of the Internet of Things (IoT) as a component of CPS, focusing on its applicat

35.6.Security and Privacy in CPS

Examine security challenges and privacy concerns in CPS, particularly how these affect teleco

35.7.Real-time Data Processing and Analytics

Learn about the techniques and technologies used for real-time data processing and analytics

35.8.Machine Learning in Cyber-Physical Systems

Understand how machine learning can be applied to optimize and innovate CPS within tele-----

35.9.Emerging Trends in CPS and Telecommunications

Discover the latest research and technological trends shaping the future of CPS in the telecom

35.10.CPS Case Studies in Telecommunications

Analyze real-world case studies where CPS has been effectively integrated into telecommunic

--

35.2 Advanced Cyber-Physical Systems in Telecommunications

This course explores the intersection of cyber-physical systems and telecommunications, prov
solutions. The course covers the architecture, design, and implementation of next-generation
world applications and research developments.

35.3 Introduction to Cyber-Physical Systems

Understand the core concepts and significance of cyber-physical systems (CPS) in the modern

Key Topics:

- **Core Concepts:** Basics of CPS and their importance in modern technology.
- **Significance:** Understanding why CPS are crucial in telecommunications.
- **Applications:** Various applications of CPS in different sectors.

35.4 Network Architecture in CPS

Study the architectural principles of integrating CPS with telecommunication networks, includi

Key Topics:

- **Architectural Principles:** Fundamentals of network architecture in CPS.
- **Topologies:** Different types of network topologies used in CPS.
- **Network Protocols:** Understanding network protocols for CPS integration.
- **Infrastructure:** Building and managing CPS infrastructure in telecommunications

35.5 IoT and Cyber-Physical Systems

Explore the role of the Internet of Things (IoT) as a component of CPS, focusing on its applicat

Key Topics:

- **IoT Basics:** Understanding the fundamentals of IoT.
- **IoT in CPS:** How IoT devices integrate with CPS.
- **Applications in Telecommunications:** Using IoT for enhancing telecommunicat

35.6 Security and Privacy in CPS

Examine security challenges and privacy concerns in CPS, particularly how these affect teleco

Key Topics:

- **Security Challenges:** Identifying and addressing security issues in CPS.
- **Privacy Concerns:** Ensuring data privacy in CPS applications.
- **Impact on Telecommunications:** Understanding how security and privacy issue

35.7 Real-time Data Processing and Analytics

Learn about the techniques and technologies used for real-time data processing and analytics

Key Topics:

- **Real-time Processing:** Techniques for real-time data processing in CPS.
- **Analytics:** Using analytics to gain insights from CPS data.
- **Technologies:** Tools and technologies for real-time data processing and analytics

35.8 Machine Learning in Cyber-Physical Systems

Understand how machine learning can be applied to optimize and innovate CPS within telecon

Key Topics:

- **Machine Learning Basics:** Introduction to machine learning concepts.
- **Applications in CPS:** How machine learning enhances CPS functionality.
- **Telecommunications:** Using machine learning for innovative solutions in telecon

35.9 Emerging Trends in CPS and Telecommunications

Discover the latest research and technological trends shaping the future of CPS in the telecom

Key Topics:

- **Research Developments:** Latest research in CPS and telecommunications.
- **Technological Trends:** Emerging technologies impacting CPS.
- **Future Prospects:** Predicting the future of CPS in the telecommunications indust

35.10 CPS Case Studies in Telecommunications

Analyze real-world case studies where CPS has been effectively integrated into telecommunic

Key Topics:

- **Case Studies:** Detailed analysis of successful CPS implementations.
- **Integration Strategies:** Understanding strategies for integrating CPS in telecom
- **Lessons Learned:** Key takeaways from real-world CPS applications in telecommu

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36. Topics:

37. Master's Program in Artificial Intelligence and Machine Learning for Software Engineering

This course provides an in-depth exploration of artificial intelligence and machine learning wit
and practical skills required to implement AI/ML solutions efficiently within software applicatio
applications of AI and ML, fostering the development and deployment of intelligent software s

4.1 .12.15..36.1.Introduction to Artificial Intelligence and Machine Learning

This topic covers the fundamental concepts, history, and evolution of AI and ML, providing a b
software engineering.

36.2.Data Preprocessing and Feature Engineering

This module focuses on preparing data for machine learning models, involving data cleaning,
discussed to improve model performance.

36.3.Supervised Learning Techniques

Discover various supervised learning algorithms such as regression, decision trees, and neura

36.4.Unsupervised Learning and Clustering

Explore unsupervised learning methods, including clustering and dimensionality reduction, wh

36.5.Deep Learning and Neural Networks

This topic delves into the structure and function of neural networks, focusing on deep learning

36.6.Natural Language Processing

Gain an understanding of techniques to process and analyze human language data, facilitatin

36.7.AI/ML in Software Development Lifecycle

Learn how AI and ML can be integrated into different stages of software development, from re
performance.

36.8.Ethical and Responsible AI

Address the ethical considerations and responsibilities in AI, focusing on issues such as bias,

36.8.Deployment and Scaling of AI Solutions

Learn the practical considerations and challenges of deploying and scaling AI/ML solutions in p
standards.

37.1 Master's Program in Artificial Intelligence and Machine Learning for Software Engineering

This course provides an in-depth exploration of artificial intelligence and machine learning wit
and practical skills required to implement AI/ML solutions efficiently within software applicatio
applications of AI and ML, fostering the development and deployment of intelligent software s

37.2 Introduction to Artificial Intelligence and Machine Learning

This topic covers the fundamental concepts, history, and evolution of AI and ML, providing a b
software engineering.

Key Topics:

- **Fundamental Concepts:** Basics of AI and ML, including key definitions and princ
- **History and Evolution:** Tracing the development of AI and ML over time.
- **Impact on Software Engineering:** Understanding how AI and ML are transform

37.3 Data Preprocessing and Feature Engineering

This module focuses on preparing data for machine learning models, involving data cleaning,
discussed to improve model performance.

Key Topics:

- **Data Cleaning:** Techniques for handling missing values, outliers, and inconsisten
- **Normalization and Transformation:** Methods for scaling and transforming data
- **Feature Engineering:** Creating and selecting relevant features to enhance mode

37.4 Supervised Learning Techniques

Discover various supervised learning algorithms such as regression, decision trees, and neura

Key Topics:

- **Regression:** Linear and logistic regression techniques.
- **Decision Trees:** Understanding how decision trees work and their applications.
- **Neural Networks:** Basics of neural networks and how they can be used in superv

37.5 Unsupervised Learning and Clustering

Explore unsupervised learning methods, including clustering and dimensionality reduction, wh

Key Topics:

- **Clustering:** Techniques such as K-means, hierarchical clustering, and DBSCAN.
- **Dimensionality Reduction:** Methods like PCA (Principal Component Analysis) an
- **Applications:** Real-world applications of unsupervised learning in software syster

37.6 Deep Learning and Neural Networks

This topic delves into the structure and function of neural networks, focusing on deep learning

Key Topics:

- **Deep Learning:** Understanding deep learning architectures like CNNs (Convoluti
- **Neural Network Structures:** Layers, activation functions, and backpropagation.
- **Advanced Techniques:** Exploring advanced topics such as transfer learning and

37.7 Natural Language Processing

Gain an understanding of techniques to process and analyze human language data, facilitatin

Key Topics:

- **Text Preprocessing:** Techniques for tokenization, stemming, and lemmatization
- **NLP Models:** Understanding models like Word2Vec, BERT, and GPT.
- **Applications:** Implementing NLP in chatbots, sentiment analysis, and other appli

37.8 AI/ML in Software Development Lifecycle

Learn how AI and ML can be integrated into different stages of software development, from re
performance.

Key Topics:

- **Requirement Gathering:** Using AI for requirement analysis and specification.
- **Development:** Incorporating AI/ML algorithms into software development proces
- **Testing:** Automated testing and bug detection using AI.
- **Deployment:** Best practices for deploying AI/ML solutions in production environm

37.9 Ethical and Responsible AI

Address the ethical considerations and responsibilities in AI, focusing on issues such as bias, t

Key Topics:

- **Bias and Fairness:** Identifying and mitigating biases in AI models.
- **Transparency:** Ensuring transparency in AI decision-making processes.
- **Accountability:** Establishing accountability for AI outcomes and decisions.

37.10 Deployment and Scaling of AI Solutions

Learn the practical considerations and challenges of deploying and scaling AI/ML solutions in p
standards.

Key Topics:

- **Deployment Challenges:** Overcoming challenges in deploying AI solutions.
- **Scaling Techniques:** Techniques for scaling AI/ML models to handle large volum
- **Performance Monitoring:** Ensuring ongoing performance and reliability of AI so

These courses provide a comprehensive understanding of artificial intelligence and machine le
innovate and lead in this rapidly evolving field

37..Topics:

4.1 .12.15.37.1.Advanced Studies in Autonomous Vehicles and Drones for Electric Vehicle Engi

This course provides an in-depth exploration of the engineering principles and technological in
Vehicle Engineering, the curriculum bridges the gap between hardware design, software deve
autonomous systems.

37.1.Introduction to Autonomous Systems

An overview of autonomous vehicle and drone technologies, including historical development

37.2Electric Vehicle Engineering Basics

Foundational concepts of electric vehicle engineering, including battery technology and electr

37.3.Sensor Technologies and Data Processing

Understanding the sensors used in autonomous systems, including LIDAR, RADAR, and camer

37.4.Machine Learning and AI for Autonomous Systems

Exploration of machine learning and artificial intelligence applications in autonomous decision

37.5.Communication Networks and IoT

Study of communication networks and the role of IoT in connecting autonomous vehicles and

37.6.Control Systems for Autonomous Vehicles

Examination of control systems used for vehicle dynamics and operational management in au

37.7Ethical and Regulatory Aspects

Discussion on the ethical implications and regulatory challenges associated with the deployme

37.8.Testing and Validation of Autonomous Systems

Processes involved in testing and validation methodologies to ensure the safety and reliability

37.9.Integration of Renewable Energy in Autonomous Systems

Integration of renewable energy sources like solar and wind power into autonomous systems t

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37.1 Advanced Studies in Autonomous Vehicles and Drones for Electric Vehicle Engineering

This course provides an in-depth exploration of the engineering principles and technological in
Vehicle Engineering, the curriculum bridges the gap between hardware design, software deve
autonomous systems.

37.2 Introduction to Autonomous Systems

An overview of autonomous vehicle and drone technologies, including historical development

Key Topics:

- **Historical Development:** Tracing the evolution of autonomous systems from inc
- **Technologies:** Key technologies driving autonomous vehicles and drones.
- **Future Trends:** Predicting the future advancements and trends in autonomous s

37.3 Electric Vehicle Engineering Basics

Foundational concepts of electric vehicle engineering, including battery technology and electr

Key Topics:

- **Battery Technology:** Understanding the types, design, and performance of batte
- **Electric Motor Design:** Basics of electric motor functionality and design.
- **Charging Systems:** Overview of charging infrastructure and technologies.

37.4 Sensor Technologies and Data Processing

Understanding the sensors used in autonomous systems, including LIDAR, RADAR, and camer

Key Topics:

- **LIDAR and RADAR:** Functionality and applications in autonomous systems.
- **Cameras and Imaging:** Role of cameras in autonomous navigation and obstacle

- **Data Processing Algorithms:** Techniques for processing and analyzing sensor d

37.5 Machine Learning and AI for Autonomous Systems

Exploration of machine learning and artificial intelligence applications in autonomous decision

Key Topics:

- **Machine Learning:** Applying ML algorithms for autonomous systems.
- **AI Decision-Making:** Implementing AI for navigation and obstacle avoidance.
- **Real-World Applications:** Case studies of AI and ML in autonomous vehicles and

37.6 Communication Networks and IoT

Study of communication networks and the role of IoT in connecting autonomous vehicles and

Key Topics:

- **Communication Protocols:** Understanding the protocols used in autonomous ve
- **IoT Integration:** How IoT devices enhance connectivity in autonomous systems.
- **Network Security:** Ensuring secure communication in autonomous networks.

37.7 Control Systems for Autonomous Vehicles

Examination of control systems used for vehicle dynamics and operational management in au

Key Topics:

- **Vehicle Dynamics:** Basics of vehicle control and dynamics.
- **Control Algorithms:** Algorithms used for maintaining stability and control.
- **Operational Management:** Managing the operations of autonomous systems.

37.8 Ethical and Regulatory Aspects

Discussion on the ethical implications and regulatory challenges associated with the deployme

Key Topics:

- **Ethical Considerations:** Addressing the ethical issues in autonomous system de
- **Regulatory Frameworks:** Understanding the regulations governing autonomous
- **Compliance:** Ensuring compliance with legal and ethical standards.

37.9 Testing and Validation of Autonomous Systems

Processes involved in testing and validation methodologies to ensure the safety and reliability

Key Topics:

- **Testing Methodologies:** Techniques for testing autonomous systems.
- **Validation Processes:** Ensuring the reliability and safety of autonomous vehicles
- **Case Studies:** Real-world examples of testing and validation.

37.10 Integration of Renewable Energy in Autonomous Systems

Investigating how renewable energy sources can be integrated into autonomous vehicles and

Key Topics:

- **Renewable Energy Sources:** Types of renewable energy used in autonomous sy
- **Integration Techniques:** Methods for integrating renewable energy into vehicle
- **Sustainability:** Promoting sustainable practices in autonomous vehicle engineeri

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38.1.topics

4.1 .12.15.38.2:Specialist Engineering in Infrastructure and Contractors: Electrochemical Engi

This Master's degree course offers in-depth knowledge in electrochemical engineering within t
fundamental theories and practical skills necessary to tackle complex engineering projects inv
students will explore various applications and innovative solutions pertinent to sustainable inf

38.3.Introduction to Electrochemical Engineering

Understand the basic principles of electrochemistry, including thermodynamics and kinetics, e
systems.

38.4.Battery Technologies for Infrastructure

Explore the various types of battery technologies used in infrastructure, including lithium-ion,

38.5.Fuel Cells and Their Applications

Study the principles and applications of different types of fuel cells, focusing on their role in pr

38.6.and Its Prevention

Learn about the electrochemical processes involved in corrosion, methods of prevention, and

38.7..Electrochemical Sensors and Monitoring

Understand the design and function of electrochemical sensors in monitoring environmental c

38.8.Electrolysis and Industrial Processes

Explore how electrolysis is used in various industrial processes, such as water splitting for hyd

38.9.Sustainability and Electrochemical Engineering

Discuss the impact of electrochemical engineering on sustainable infrastructure development

.38.10.Advanced Topics in Electrochemical Engineering

Delve into advanced topics and current research trends in electrochemical engineering, such

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38.2 Specialist Engineering in Infrastructure and Contractors: Electrochemical Engineering

This Master's degree course offers in-depth knowledge in electrochemical engineering within t
fundamental theories and practical skills necessary to tackle complex engineering projects inv
students will explore various applications and innovative solutions pertinent to sustainable inf

38.3 Introduction to Electrochemical Engineering

Understand the basic principles of electrochemistry, including thermodynamics and kinetics, e
systems.

Key Topics:

- **Thermodynamics and Kinetics:** Fundamental principles governing electrochem
- **Electron Transfer Processes:** Mechanisms of electron transfer in electrochemic
- **System Design and Operation:** Designing and operating efficient electrochemi

38.4 Battery Technologies for Infrastructure

Explore the various types of battery technologies used in infrastructure, including lithium-ion,

Key Topics:

- **Lithium-ion Batteries:** Structure, function, and applications.
- **Lead-acid Batteries:** Traditional uses and modern improvements.
- **Emerging Technologies:** Exploring the potential of solid-state and other advanc

38.5 Fuel Cells and Their Applications

Study the principles and applications of different types of fuel cells, focusing on their role in pr

Key Topics:

- **Types of Fuel Cells:** Proton exchange membrane (PEM), solid oxide (SOFC), and
- **Clean Energy Production:** How fuel cells contribute to sustainable energy soluti
- **Infrastructure Applications:** Real-world applications of fuel cells in infrastructu

38.6 Corrosion and Its Prevention

Learn about the electrochemical processes involved in corrosion, methods of prevention, and

Key Topics:

- **Corrosion Mechanisms:** Understanding how and why corrosion occurs.
- **Prevention Methods:** Techniques to prevent and control corrosion.
- **Materials Selection:** Choosing materials to enhance durability and prevent corr

38.7 Electrochemical Sensors and Monitoring

Understand the design and function of electrochemical sensors in monitoring environmental c

Key Topics:

- **Sensor Design:** Principles of designing effective electrochemical sensors.
- **Environmental Monitoring:** Using sensors to monitor environmental conditions.
- **Structural Health Monitoring:** Applications in assessing the health and integrit

38.8 Electrolysis and Industrial Processes

Explore how electrolysis is used in various industrial processes, such as water splitting for hyd

Key Topics:

- **Electrolysis Basics:** Understanding the principles of electrolysis.
- **Hydrogen Production:** Using electrolysis for sustainable hydrogen generation.
- **Industrial Applications:** Applying electrolysis in metal plating and other industri

38.9 Sustainability and Electrochemical Engineering

Discuss the impact of electrochemical engineering on sustainable infrastructure development

Key Topics:

- **Sustainability Principles:** Integrating sustainability into electrochemical engine

- **Environmental Impact:** Assessing and mitigating the environmental impact of e
- **Sustainable Development:** Promoting sustainable infrastructure through innova

38.10 Advanced Topics in Electrochemical Engineering

Delve into advanced topics and current research trends in electrochemical engineering, such a

Key Topics:

- **Nanostructured Materials:** Exploring the role of nanotechnology in electrochem
- **Next-Generation Energy Systems:** Innovations in energy systems for sustainab
- **Current Research Trends:** Investigating the latest advancements and research

These courses provide a comprehensive understanding of electrochemical engineering in infra complex engineering projects and promote sustainable developme

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40.Topics

4.1 .12.15..40.1Topics:Energy Storage and Battery Technology

This course explores advanced concepts in energy storage with a focus on battery technologie understanding of various energy storage systems, their applications, and the technological ad program in renewable energy, providing both theoretical knowledge and practical insights.

40.2.Introduction to Energy Storage Systems

An overview of energy storage technologies and their importance in the modern energy lands

40.3.Battery Chemistry and Physics

Understanding the fundamental principles of various battery chemistries, including lithium-ion

40.4.Design and Functionality of Battery Cells

Exploration of the design and operational principles of individual battery cells, and how they c

40.5.Applications of Battery Storage

Examine how battery storage is used in various sectors such as electric vehicles, grid storage,

40.6.Efficiency and Performance Measurements

Learn about the metrics used to measure the performance and efficiency of battery systems.

40.7.Safety and Environmental Impacts

Discussion of the safety protocols for batteries and their environmental impact, including recy

40.8.Advanced Energy Storage Technologies

Explore cutting-edge advancements in energy storage beyond current battery technology, suc

40.9.Policy and Economics of Energy Storage

Examine the economic impacts, policy considerations, and market dynamics of implementing

40.10.Future Trends in Battery Technology

Insights into the future direction of battery technology research and its role in achieving a sus

41.1.Topics:

41.2.Advanced Robotic Process Automation in Electrical Engineering

This course aims to equip students with advanced knowledge and practical skills in implement curriculum addresses the integration of RPA technologies to streamline and optimize engineer

41.3.Introduction to Robotic Process Automation

An overview of RPA, its significance in the industry, and its application in electrical engineerin

41.4.RPA Tools and Technologies

Explore popular RPA tools like UiPath, Automation Anywhere, and Blue Prism and their specific

41.5.Automating Electrical Design Processes

Learn how to automate repetitive tasks in electrical design using RPA to increase efficiency ar

41.6.Data Migration and Management

Understanding the role of RPA in handling data migration and management in electrical engin

41.7.RPA in Control Systems

Applications of RPA in the automation of control systems and simulation processes within elec

41.8.Machine Learning and RPA

Integrating machine learning with RPA for enhanced decision-making and predictive maintena

41.9.RPA and IoT in Electrical Systems

Exploring the synergy between RPA and IoT to develop smart electrical systems with improve

41.10.Security and Ethics in RPA

Understanding the ethical considerations and security challenges associated with the deploym

1.2 Advanced Robotic Process Automation in Electrical Engineering

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41.3 Introduction to Robotic Process Automation

An overview of RPA, its significance in the industry, and its application in electrical engineerin

Key Topics:

- **RPA Basics:** Understanding the fundamentals of Robotic Process Automation.
- **Industry Significance:** Exploring the importance and impact of RPA in various in
- **Applications in Electrical Engineering:** Specific use cases and benefits of RPA

41.4 RPA Tools and Technologies

Explore popular RPA tools like UiPath, Automation Anywhere, and Blue Prism and their specific

Key Topics:

- **UiPath:** Features and applications of UiPath in automating engineering tasks.
- **Automation Anywhere:** Understanding how Automation Anywhere can be used
- **Blue Prism:** Exploring Blue Prism's capabilities and use cases in the industry.

41.5 Automating Electrical Design Processes

Learn how to automate repetitive tasks in electrical design using RPA to increase efficiency ar

Key Topics:

- **Repetitive Task Automation:** Identifying and automating repetitive tasks in ele
- **Efficiency Improvement:** Enhancing efficiency and productivity through automa
- **Error Reduction:** Minimizing human errors by implementing RPA solutions.

41.6 Data Migration and Management

Understanding the role of RPA in handling data migration and management in electrical engin

Key Topics:

- **Data Migration:** Techniques for automating data migration processes.
- **Data Management:** Using RPA to manage and organize large datasets.
- **Project Applications:** Implementing RPA for data handling in engineering projec

41.7 RPA in Control Systems

Applications of RPA in the automation of control systems and simulation processes within elec

Key Topics:

- **Control Systems Automation:** Using RPA to automate control system processes
- **Simulation Processes:** Enhancing simulation processes through automation.
- **Case Studies:** Real-world examples of RPA applications in control systems.

41.8 Machine Learning and RPA

Integrating machine learning with RPA for enhanced decision-making and predictive maintena

Key Topics:

- **Machine Learning Integration:** Combining ML algorithms with RPA for advance
- **Predictive Maintenance:** Using ML and RPA for proactive maintenance strategie
- **Enhanced Decision-Making:** Improving decision-making processes through inte

41.9 RPA and IoT in Electrical Systems

Exploring the synergy between RPA and IoT to develop smart electrical systems with improved

Key Topics:

- **RPA and IoT Integration:** Understanding how RPA and IoT can work together.
- **Smart Systems:** Developing smart electrical systems using RPA and IoT.
- **Efficiency and Functionality:** Enhancing system functionality and efficiency thr

41.10 Security and Ethics in RPA

Understanding the ethical considerations and security challenges associated with the deploym

Key Topics:

- **Ethical Considerations:** Addressing ethical issues in RPA implementation.
- **Security Challenges:** Identifying and mitigating security risks in RPA systems.
- **Best Practices:** Implementing best practices for secure and ethical RPA deploym

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These courses provide a comprehensive understanding of advanced robotic process automati
innovate and lead in this field.

44...Topics grand circulum summarise resolve probme outcome exercise :

44.1 reating a comprehensive and accurate calculation formulation for a master's degree in e
specific topic or project you are working on. Here, I'll outline a general approach to developing

44..1. Define the Problem

- Clearly state the engineering problem or objective.
- Identify the variables and parameters involved.
- Determine the constraints and assumptions.

2. Develop the Mathematical Model

- Formulate the equations governing the physical system (e.g., Ohm's law, Kirchhof
- Use appropriate mathematical techniques to model the system (e.g., differential e

3. Simplify the Equations

- Apply any necessary simplifications or approximations.
- Reduce the equations to a solvable form.

4. Analytical Solution (if possible)

- Solve the equations analytically using mathematical methods.
- Check the validity of the analytical solution within the defined constraints.

5. Numerical Solution (if necessary)

- If the analytical solution is not feasible, develop a numerical solution.
- Use numerical methods (e.g., finite element method, numerical integration).

6. Simulation and Validation

- Implement the model in simulation software (e.g., MATLAB, Simulink).
- Validate the results with experimental data or known benchmarks.

7. Optimization (if applicable)

- Optimize the solution for desired performance criteria (e.g., efficiency, cost).

- Use optimization techniques (e.g., genetic algorithms, gradient descent).

Example Calculation: Load Flow Analysis in Power Systems

Here's a simplified example of a calculation formulation for load flow analysis in power system

Step 1: Define the Problem

- Objective: Determine the voltage and phase angle at each bus in the power syste
- Variables: Bus voltages (V), phase angles (θ), real power (P), reactive power (Q).
- Constraints: Power balance equations, voltage limits.

Step 2: Develop the Mathematical Model

- Use the power flow equations: $$P_i = V_i \sum_{j=1}^{n} V_j (G_{ij} \cos \theta
B_{ij} \cos \theta_{ij})$$ Where GijG_{ij} and BijB_{ij} are the conductance and susceptance

Step 3: Simplify the Equations

- Apply any necessary assumptions (e.g., flat start method with initial voltage guess

Step 4: Analytical Solution

- Not feasible for large power systems.

Step 5: Numerical Solution

- Use the Newton-Raphson method to solve the power flow equations iteratively.

Step 6: Simulation and Validation

- Implement the Newton-Raphson method in MATLAB.
- Validate the results with a test power system.

Step 7: Optimization

- Optimize the power flow to minimize losses or improve voltage stability.

By following these steps, you can create a robust and accurate calculation formulation for var
details on any step, feel free to ask!

Electrical engineering encompasses a wide range of topics that involve various calculations. H
with them:

1. **Circuit Analysis**

- **Ohm's Law:** V=IRV = IR
- **Power Calculations:** P=VIP = VI, P=I2RP = I^2R

- **Kirchhoff's Laws:** Kirchhoff's Voltage Law (KVL) and Kirchhoff's Current Law (KCL

- **Impedance and Reactance:** Calculating the impedance (ZZ) of AC circuits, indu
= \frac{1}{2\pi fC})

2. **Electromagnetics**
   - **Coulomb's Law:** F=keq1q2r2F = k_e \frac{q_1 q_2}{r^2}

   - **Electric Field Calculations:** E=FqE = \frac{F}{q}

   - **Magnetic Field Calculations:** Using Biot-Savart Law and Ampère's Law

3. **Signal Processing**
   - **Fourier Transforms:** Transforming signals from time domain to frequency doma

   - **Laplace Transforms:** For analyzing linear time-invariant systems

   - **Z-Transforms:** Used in digital signal processing for discrete-time signals

4. **Control Systems**
   - **Transfer Functions:** H(s)=Y(s)X(s)H(s) = \frac{Y(s)}{X(s)}

   - **Stability Analysis:** Using Routh-Hurwitz criterion, Nyquist criterion, and Bode plo

   - **PID Controller Tuning:** Calculations for proportional, integral, and derivative gai

5. **Power Systems**
   - **Load Flow Analysis:** Solving the power flow equations using methods like Newto

   - **Short Circuit Calculations:** Determining the fault current levels in a power syste

   - **Power Factor Correction:** Calculations to improve the power factor of electrical

6. **Electronics**
   - **Transistor Biasing:** Calculations for setting the operating point of transistors

   - **Amplifier Design:** Gain and bandwidth calculations for different types of amplifie

   - **Oscillator Design:** Frequency and stability calculations for oscillators

7. **Digital Systems**
   - **Logic Gates and Boolean Algebra:** Simplifying Boolean expressions

- **Flip-Flops and Counters:** Timing and state analysis
- **Digital Signal Processing:** Sampling, quantization, and digital filter design

8. Communication Systems

- **Modulation Techniques:** Calculations for AM, FM, and PM systems
- **Signal-to-Noise Ratio (SNR):** Calculating the quality of a signal

Bandwidth Calculations: Determining the bandwidth requirements for various

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